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March, 1949

The Relation of Anatomical Incisions and Their Closure to Early Ambulation

HOWARD E. LAMB, D.O., F.A.C.O.S.
Denver

Early ambulation, as a part of the postoperative care of the surgical patient, is dependent upon three distinct factors or procedures which are all a part of the surgical technic executed during the time of surgery. It is difficult to say which of the three is most important. For the sake of discussion, however, I will list them as: (1) A properly placed incision which is made in conformity with the anatomy of the abdominal wall; (2) the type of suture material used to close the incision; (3) the type of stitch used to close the incision. The third consideration covers discussion of whether the suture is running or interrupted and, if interrupted, whether one suture incorporates all of the layers of the abdomen or merely closes one layer of the abdomen at a time.

When early ambulation is included as a part of the postoperative care of a surgical patient *it implies short periods of activity alternating with bed rest.* In the great majority of cases bed rest to overcome fatigue and physical exhaustion is a fundamental part of the postoperative care and is still as important as ever. Proof of its value has been established beyond doubt. Certainly, there should be no spectacular attempt to get the patient out of bed early as a part of the postoperative care, as many factors must be taken into consideration. As with any new advance in surgery, the proponents of early ambulation have been prone to emphasize the value and advantages of the procedure or method in which they are pioneering and therefore likely to minimize its disadvantages. Most certainly the age of the patient, the condition of the body chemistry, the type of incision, and the kinds of suture material, as well as the form of stitch used, are factors which should be guides as to the amount and type of exercise permitted.

The original article on early ambulation was written by Emil Ries[1] in 1899. The reports which he made on patients after early ambulation were not different from those made by Leithauser and Bergo[2] in 1941 and subsequent reports by other surgeons throughout the country. Failure of the surgical profession generally to accept early ambulation as a part of postoperative care after Ries' report was undoubtedly due to the fact that the incidence of evisceration or wound hernia was so great at that time that they believed the dangers associated with these conditions were greater than the advantages which the patient would gain from early ambulation. Early ambulation, therefore, is a logical development in the progress of surgery. It is now desirable and safe only because of the advancements made in other phases of surgical treatment. This paper is not intended to extoll the values of early ambulation but rather to explain why it is a safe method if the surgical technic used tends to reduce the incidence of evisceration, wound hernia, and postoperative complications.

Early ambulation of the surgical patient was brought to the attention of the American College of Osteopathic Surgeons at the Philadelphia meeting in 1943. At that time A. C. Johnson[3] reported on a large series of cases in which he emphasized the use of cotton suture material in relation to early ambulation. Many of us have had an opportunity to repair postoperative wound hernias following early ambulation even though cotton suture material may have been used to close the wound. I would hesitate to say, therefore, that early ambulation was possible because of the suture material used. It must be assumed, therefore, as stated in the opening paragraph, that the three important factors are: the type of incision used to open the abdomen, the kind of suture material used to close it, and the technic employed in applying the suture material.

INCISIONS

The advancement made in surgical diagnosis during recent years has practically eliminated the necessity for an exploratory incision to make a diagnosis. With the improvement in the knowledge of surgical diagnosis, the surgeon now places the incision with the confidence that he has made a correct diagnosis and knows which portion of the abdomen must be exposed in order to carry out a definite surgical procedure. Seldom is an incision made to remove the gallbladder when the pathologic condition is in the appendix. Rarely does the surgeon make an incision to treat a carcinoma or ulcer of the stomach when the disease is actually in the gallbladder.

During the past several years, I have been doing some clinical research and have given special study to anatomical incisions. During that period I noted in making transverse incisions above the umbilicus, that most of the fibers in the anterior sheath of the rectus run directly across the rectus abdominis, although according to anatomy texts, the fibers of the aponeurosis of the external oblique should run in the same direction as the muscle—downward, inward, and medially across the rectus muscle to the midline. This observation disturbed me so often that I decided to present the matter to Richard R. Stuart, Ph.D., of the Department of Anatomy of the College of Osteopathic Physicians and Surgeons at Los Angeles, with the request that he dissect the abdominal wall to determine whether these fibers were as we found them on the operating table or as described by authorities on anatomy. As a result of this dissection Dr. Stuart[4] gave a report from which the following is quoted:

"*Anatomy of the Abdominal Wall.*—This area has been described so many times and in such detail that it seems hardly necessary to repeat such a description in its entirety. It does seem worthwhile, however, in this instance to revise some of the pertinent notions and; on the basis of observation in this laboratory, to add a point or two and to question some existing concepts.

"It is well known that the prevailing direction of the muscle fibers of the transversus abdominis muscle is in a transverse plane excepting for those fibers

which take origin from the anterior superior iliac spine and from the inguinal ligament. These latter turn downward and tend to approximate the direction of the inguinal ligament.

"The prevailing direction of the muscle fibers of the internal oblique muscle is upward, forward, and medially, except for those fibers which arise from the neighborhood of the anterior superior iliac spine and from the inguinal ligament. These latter change direction gradually, turning downward also to approximate the direction of the inguinal ligament. The prevailing direction of the muscle fibers of the external oblique muscle is downward, forward, and medially throughout.

"The fibers of the respective aponeuroses tend to continue the direction of the corresponding muscle fibers, blending in the midline to form the linea alba and even continuing to the opposite side.

"It is generally understood that the posterior portion of the rectus sheath extends from the fold of Douglas (i.e. about midway between the umbilicus and the pubic symphysis) upward to the costal margin and consists of the aponeuroses of the transversus abdominis and the posterior lamina of the internal oblique. Likewise the anterior portion of the rectus sheath extends from the pubic symphysis upward as far as the insertion of the rectus abdominis to the thoracic cage and consists of (1) the aponeurosis of the external oblique, (2) the anterior lamina of the internal oblique (pubis to thorax), (3) the posterior lamina of the internal oblique (pubis to level of the fold of Douglas), and (4) the aponeurosis of transversus abdominis (pubis to level of fold of Douglas).

"Careful dissection in this laboratory tends to establish that the anterior lamina of the aponeuroses of the internal oblique does not always extend as high as the costal margin but frequently stops short by several inches. (See Figs. 3 and 4.) Above this level the aponeurotic portion of the anterior layer of the rectus sheath consists entirely of the aponeurosis of the external oblique muscle.

"Not generally appreciated is the fact that in this upper portion the anterior layer of the rectus sheath is formed in part, and reinforced considerably, by a very tough deep fascia which blends with the aponeurosis of the external oblique over the rectus muscle but is easily separable from the muscle laterally, the greatest slope being in the lateral area while in the midline the fibers are more or less vertical coinciding with the midvertical line (Figs. 1 and 2).

It should be pointed out that the prevailing directions of the fibers of this deep fascia correspond rather closely to that of the lines of Langer (lines of the attachment of the corium) across which a surgeon cuts only at the expense of a gaping wound and extensive scar formation later.

"A point sometimes overlooked by surgeons using the supra umbilical transverse incision is that the segmentally arranged intercostal nerves and vessels, in the plane between internal oblique and the transversus abdominis, take an almost transverse direction in the anterior abdominal wall of the pyknic (short and stocky type) while they slope downward as well as medially in the asthenic (long and slender type). Obviously, the danger of cutting three or more nerves is much greater in the latter than in the former type."

Stuart also states that "Generally the prevailing direction (of the lines of Langer) parallels the lines of tension and compression of the skin in ordinary movements." Furthermore, on this basis it would seem probable that these lines serve also as an indication of direction of tension produced by all factors (e.g., bodily movements, gravity, etc.) upon the abdominal wall generally.

From Stuart's description of the anatomy of the anterior abdominal wall we would draw these conclusions: (1) That the fascial strength of the anterior abdominal wall is greater posterior to the rectus abdominis muscle from the fold of Douglas to the costal arch than it is anterior to the rectus abdominis muscle; (2) the pull of the flat muscles of the abdomen laterally away from the midline is greater above the umbilicus than it is below the umbilicus since these muscles are intimately associated with respiration. It would seem also that the anterior sheath of the rectus abdominis muscle is more dense and fibrous below the fold of Douglas, and therefore has more tensile strength than does the transversalis fascia posterior to the rectus muscle below the fold of Douglas. The further observation also is made that the strength of the rectus abdominis muscle below the umbilicus is far greater and better developed than is the rectus abdominis muscle above the umbilicus. This greater strength of the rectus abdominis muscle below the umbilicus partially offsets the degree of lateral pull by the flat muscles of the abdominal wall. This lessening of lateral pull makes closure of a vertical incision in the midline easier and reduces the likelihood of wound hernia below the umbilicus. If these various observa-

DISSECTION OF ABDOMINAL WALL (SCHEMATIC)

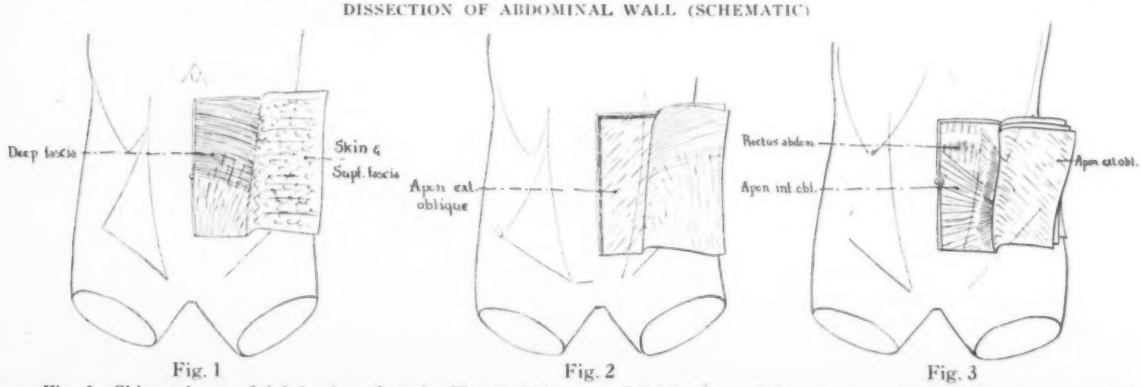

Fig. 1 Fig. 2 Fig. 3

Fig. 1. Skin and superficial fascia reflected. Fig. 2. Skin, superficial fascia, and deep fascia reflected. Fig. 3. Skin, superficial fascia, deep fascia, and aponeurosis reflected.

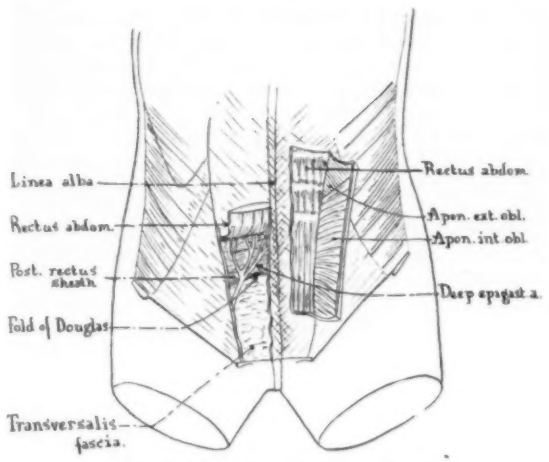

Fig. 4. Dissection of rectus sheath.

tions be true the closure of the posterior sheath of the rectus above the umbilicus assumes the same importance as adequate closure of the anterior sheath of the rectus below the fold of Douglas and there would be less probability of hernia following a midline or vertical incision below the fold of Douglas than there would be above it. The fibers of the transverse muscles above the fold of Douglas are so well defined that any incision through the posterior sheath of the rectus and the peritoneum should be parallel to the line of the fibers of this aponeurosis.

It has been observed by Stuart that, generally, the aponeurotic portion of the anterior sheath of the rectus above the umbilicus is likely to be delicate, but is reinforced by a well-developed deep fascia. The tension lines of Langer (line of attachment of the skin to superficial fascia) are predominantly in a transverse direction above the umbilicus and arching upward slightly. Therefore, it is possible to divide the anterior rectus sheath above the umbilicus in a transverse direction and still follow the direction of the heaviest of the fibers.

The fact that the rectus muscle is attached at intervals to the anterior sheath by transverse tendons and also that many of its fiber bundles are attached to the anterior sheath directly prevents this muscle from

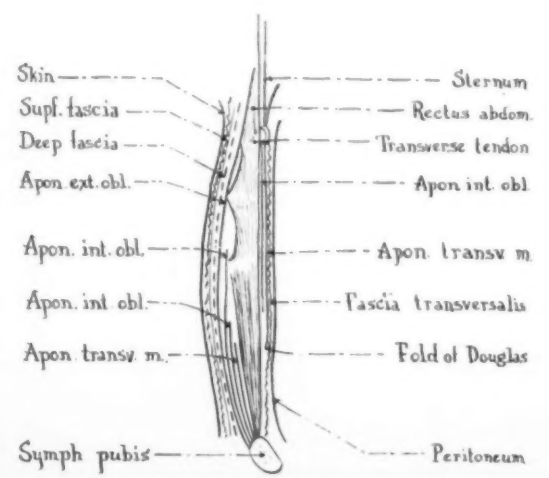

Fig. 5. Schema of rectus abdominis and sheath.

retracting when transected and consequently need not be united separately when the abdominal wall is closed. Thus we see that closure of the anterior sheath of the rectus approximates the cut ends of the muscles.

It can now be safely said that the anatomical incision for surgery above the umbilicus is a transverse incision which divides the anterior sheath of the rectus transversely, the division of one or both of the rectus abdominis muscles and the division of the transversalis muscle and the fascia parallel with its fibers. The further observation should be made that a transverse incision for upper abdominal surgery should not be made more than 1 inch above the umbilicus. If the incision is made higher than this point extension of the incision into either loin is not possible because the incision runs into the costal arch, thereby limiting the extent to which the incision can be enlarged.

The McBurney incision, if carefully performed, is unlikely to damage any essential structure and prompt healing with a minimum risk of ultimate

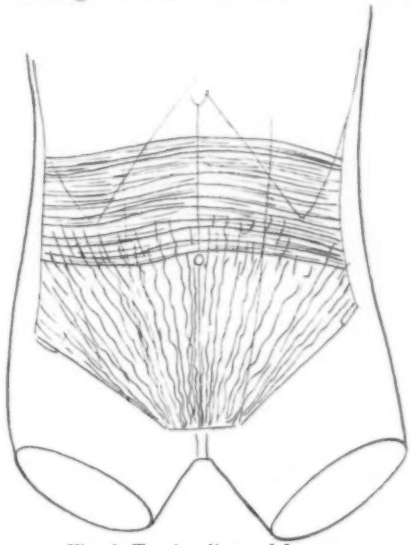

Fig. 6. Tension lines of Langer.

hernia can be expected. The chief objection to this muscle-splitting oblique wound in the right lower quadrant is that it is not easy to enlarge the opening, if such enlargement be required by the necessities of the case. There have been many modifications of the oblique incision and no doubt one who makes a careful McBurney incision does make an anatomical incision. However, the probability is that any surgeon who has learned to make use of the transverse incision will not again employ the McBurney incision.

When using the low transverse incision, if a sufficient amount of room is not available by simple displacement of the rectus there should be no hesitation about division of the right rectus and the linea alba and as much of the left rectus as may be required to permit the hand to be introduced so that adequate manipulation and exploration can be made of the gallbladder, the pancreas, the abdominal cavity, and the pelvic organs. In my experience the transverse incision, which of necessity must be placed above the fold of Douglas, perhaps not more than 1 inch below the umbilicus, does not allow proper exposure for surgery on the pelvic organs. The direction of the lines of Langer between the pubis and the umbilicus

justified the assumption that a vertical incision in the midline is anatomically sound. If a midline incision is properly closed the incidence of wound hernia can be almost completely eliminated.

The criteria for a satisfactory abdominal incision are: (1) adequate exposure, (2) conservation of the strength of the abdominal wall, (3) postoperative comfort, (4) ease of fashioning, (5) simplicity of closure, and (6) absence of unsightly scars. There has been sufficient proof in the past several years to support the contention that these criteria are better met by the employment of the transverse incision suitably placed than by any other method of performing a laparotomy.

SUTURE MATERIAL

The importance of proper suture material in closing an abdominal wound is perhaps as great as is a properly placed anatomical incision. The ideal suture material is, in my opinion, tantalum or stainless steel wire, since neither of these cause tissue reaction even in the presence of infection. When properly applied they maintain approximation of the tissue until healing takes place. My experience with the use of cotton has not been satisfactory. Too many patients returned for weeks and months following their dismissal from the hospital for the removal of cotton sutures. It is possible that I may have used a too large size cotton suture or tied the knot badly. In any event I was never satisfied with the material.

Immediately following the Detroit meeting of the American College of Osteopathic Surgeons in 1944, I was able to obtain my first allotment of tantalum wire. Since that time the deep fascia in every abdomen I have opened has been closed with nonabsorbable tantalum sutures. Single strand was first used and later braided. During the past year I have used 18-8s alloy steel wire in the same manner as tantalum with the exception that in surgery of the perineum the use of braided tantalum has been continued. In that period there has been but one wound separation, which could have been prevented had a transverse incision been used.

Since beginning the use of tantalum wire to close the deep fascia it is rare to have wound drainage such as is so commonly seen following the use of heavy catgut or cotton. In the entire period referred to there have been only two occasions when it was necessary to remove the tantalum stitch because of irritation in the wound. In both of these instances the patients were extremely slender individuals with a minimum amount of subcutaneous fat.

Small size catgut in short wounds, although not an ideal suture material, is satisfactory since it is easy to manipulate and in small amounts produces a minimum of tissue reaction. It is a well-known fact that heavy catgut or large quantities of catgut set up inflammatory processes which may delay healing and actually cause abscess formation. I now restrict the use of catgut to the closing of the peritoneum. Where one surgeon feels that triple 0 catgut is the largest that should be used, others have found single 0 or No. 1 to be satisfactory. Catgut should be used only in tissue where there is not great strain on the suture and where healing will take place rapidly, as in the peritoneum. When the surgeon expects the patient to be ambulant early and where a long incision has been made, catgut certainly is not indicated.

According to Babcock[5] no one single factor has contributed so much to the safety of early rising after abdominal operations as the secure and nonirritating wound closure obtained by using stainless steel wire. He notes that not only may the patient often be allowed out of bed with safety during the first 24 postoperative hours, but his comfort is increased greatly and his hospital stay and convalescence are shortened. Very old patients with a tendency to hypostatic congestion or those having marked arterial sclerosis or diabetes are usually benefited by early resumption of physical activity. Aside from transient faintness Babcock has seen no harm from permitting the patient to be out of bed during the early days after operation.

My experience with the use of tantalum wire parallels that of Babcock in the use of stainless steel wire. The cost of tantalum suture material is exorbitant and, since stainless alloy steel wire possesses all of the characteristics of tantalum wire insofar as tissue irritation is concerned, I have discontinued the use of tantalum in closing abdominal wounds and find the results are just as satisfactory. The only place where the use of braided tantalum wire has been continued is in perineorrhaphy where is is felt that its flexibility has some advantages over stainless alloy steel wire.

Wire suture is not a contraindication to deep therapy, x-ray, or diathermy. Full appreciation of the value of the wire suture can not be obtained except through experience. It has the disadvantage that it is not as flexible as catgut or cotton which makes it more difficult to handle and therefore more time is required to close the wound. Wire suture does not lend itself to a running suture which, in my opinion, is a distinct advantage. One is not inclined to close the abdomen with a running suture while using wire; therefore, interrupted sutures are the rule rather than the exception. Certainly the time consumed in making interrupted sutures makes closure of the wound more positive and gives a feeling of security when early ambulation is to be instituted as a part of postoperative care. No. 32 gauge stainless alloy steel wire seems to be the most practical size for the closure of the abdominal wall. Finer gauge wires are available and are useful for other types of wounds, particularly in the closure of a rectovaginal or a vesicovaginal fistula or of any infected wound, such as a fistula of the intestinal tract.

TECHNIC OF USING WIRE SUTURE IN CLOSURE OF A TRANSVERSE INCISION ABOVE THE FOLD OF DOUGLAS

When an incision through the posterior sheath of the rectus has been made in line with the fibers of the aponeurosis it permits the use of any type of suture material, since contraction of the muscle approximates the cut edges of the incision. As healing of the peritoneum and the posterior sheath of the rectus takes place rapidly, the use of catgut is permissible. Fine stainless alloy steel wire No. 30, triple 0 tantalum braided wire, or cotton are satisfactory. This is one place in the closure of the abdomen where a running stitch may be used with safety. However, it is far better to have several interrupted sutures than it is to depend upon a suture tied at either end of a relatively long wound; either of the knots may be badly tied and when either knot fails to hold, the entire wound can and does open before healing takes place.

If the rectus abdominis has been divided it is unnecessary to attempt to approximate the muscle with sutures since experience has proved conclusively that

the muscle will reunite solidly if the deep fascia is properly closed. Closure of the deep fascia in a transverse incision should always be done with interrupted sutures. Either alloy steel wire or tantalum wire is the suture material of choice. It is true, however, that catgut, cotton, or silk, when used in interrupted sutures, will satisfactorily close the deep fascia.

Babcock,[5] in his recent article on wire suturing, illustrated how he handles wire and his technic of tieing a square knot with wire suture material.

It has been repeatedly stated by numerous surgeons that only one type of suture material should be used in closing an abdomen: that is to say that if wire is used to start, its use should be continued from the peritoneum through to and including the skin. This has not been my experience; for 5 years, I have closed the peritoneum with fine double 0 or 0 catgut and then changed to other suture material with satisfactory results.

There is no necessity for the use of tension sutures in a transverse incision closed as just described. A midline incision below the fold of Douglas for pelvic surgery, as previously stated, is an anatomical incision since it is parallel to the lines of Langer. However, it is my opinion that in patients who are to be ambulated early, the closure of this midline incision deserves special consideration. The stitch should be designed to overcome any lateral pull by the flat muscles of the abdomen, which would tend to cause a separation of the incision. The choice of material inclosing this wound is No. 32 stainless alloy steel wire using interrupted sutures.

The stitch which I have adopted for the closure of this wound is what might be termed a double figure of eight. The stitch begins in the deep fascia approximately ¾ inch from the edge of the wound and to the left side of the linea alba. The needle traverses the edge of the left rectus muscle and the peritoneum on the same side. The point of the needle picks up the peritoneum on the right side of the wound approximately ¼ inch from its cut edge. After the suture has been pulled through, the next stitch picks up the peritoneum on the left side of the wound about ¼ inch from its cut edge. Then with the same sweep of the needle as previously the point of the needle is inserted through the peritoneum approximately ¾ inch from the cut edge of the right side of the incision, goes through the muscle, and comes out of the deep fascia about ¾ inch from its cut edge on the right side of the wound.

The next step in the stitch is to pick up the deep fascia on the left side of the wound about ¼ inch from its cut edge. The midline is crossed and the deep fascia picked up on the right side of the wound about ¼ inch from its cut edge. One end of the stitch now protrudes from the deep fascia on the left side of the wound about ¾ inch from its cut edge and the other end of the suture protrudes from the deep fascia about ¼ inch from the edge of the right side of the wound. The ends are tied in a simple square knot with only enough tension to approximate the edges of the wound. Great care must be taken in placing this stitch so that the tissues incorporated in the stitch are not strangulated when the sutures are tied.

Stitches are placed approximately ½ inch apart beginning at the bottom of the wound and extending to the top. If there is any gaping of the deep fascia between this stitch, the edges of the fascia should be approximated with interrupted wire sutures so that there is a definite approximation of the deep fascia throughout its length. The skin can be closed with subcuticular stitches of No. 30 alloy steel wire or with dermal suturing.

The type of closure of a midline incision which I have described not only approximates the tissues with nonirritating suture material but at the same time acts as a tension suture to overcome the lateral pull of the flat muscles. It permits early ambulation without fear of wound hernia or evisceration.

CONCLUSION

The transverse incision above the fold of Douglas is truly an anatomical incision and possesses all of the characteristics which are essential to a good incision. The transverse incision should completely replace the McBurney incision for appendectomy. The midline incision below the fold of Douglas is the incision of choice for pelvic surgery if such incision is closed with the correct suture material and a properly applied interrupted stitch. Interrupted wire sutures for the closure of a deep fascia in transverse incisions and a double figure-of-eight wire suture for closing a midline incision are factors which combine to make early ambulation safe as a part of the postoperative care.

The direction of the lines of Langer in the skin of the abdominal wall can be assumed to be the direction in which an anatomical incision should be made, since their direction is in line with the direction stress and strain of the muscles of the abdominal wall.

Lamb Memorial Hospital

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SURGICAL TREATMENT OF MYASTHENIA GRAVIS

Total thymectomy has been performed many times during the last seven years in severe cases of myasthenia gravis. . . . In view of the results reported in the literature and actual experience with two cases . . . it seems reasonable to conclude that it is worthwhile offering total thymectomy to those patients with severe myasthenia who do not respond satisfactorily to the best of medical management. Furthermore the operations demonstrated to the author's satisfaction that the procedure of total thymectomy can be completed without mishap if adequate amounts of prostigmine are given before, during and after operation, if light pressure anesthesia is given, and if the technique developed by Blalock and Keynes . . . is carefully followed.—William H. Snyder, Jr., M.D., *California Medicine*, February, 1949.

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Diseases of the Gallbladder and Biliary Passages

KARNIG TOMAJAN, D.O., F.A.C.O.S.
Boston

In dealing with biliary tract disease, presentation first from a general point of view seems worth while. In discussing biliary disease, I would like to consider it from the same aspects as numerous other diseases, such as hyperthyroidism, tuberculosis, diabetes, prostatic hypertrophy, and malignancy, are considered. There seems little likelihood that the present surgical management of biliary tract diseases will be greatly improved or surplanted by other measures. In all probability improvement in this field from now on must come largely from the discovery of the causes, particularly of cholelithiasis, and lacking that, earlier diagnosis and earlier surgery.

COMPLICATIONS OF BILIARY TRACT DISEASE

If one recalls the undesirable complications of biliary tract disease, such as acute cholecystitis, pancreatitis, common duct stone, cholangitis, and hepatitis linked with diminished liver function, one is convinced that delay in the treatment of this disease, as in hyperthyroidism, appendicitis, malignancy, and many other diseases, is the avoidable factor which results in many of these unwished serious complications.

Acute cholecystitis rarely occurs unless gallstones have been present for some time or until a stone becomes wedged in the cystic duct and the infected gallbladder is shut off to form a culture tube for the growth of organisms and the infiltration of the gallbladder wall. The same thing is largely true of pancreatitis. The direct association of cholelithiasis, cholecystitis, infections of the common duct, and pancreatitis is not definitely established, and true pancreatitis apparently does occur at times unassociated with demonstrable lesions in the biliary tract. However, considering the number of cases of pancreatitis in which gallstones and infection in the biliary tract are present and the number benefited by drainage of the common duct, one cannot fail to be impressed with the likelihood of association between the two conditions.

Common duct stone has always been closely associated with late and prolonged biliary tract infection, particularly infection and stones in the gallbladder. Courvoisier's law which is so valuable and dependable suggests strongly that common duct stone occurs only after prolonged infection within the gallbladder. Courvoisier's law is that in the presence of jaundice, a contracted gallbladder found at operation suggests that the jaundice is due to obstruction of the duct from gallstones, while a dilated gallbladder suggests that the obstruction is due to malignancy. In support of the first portion of this law, experience with stones in the common and hepatic ducts has taught me that almost always when the gallbladder is contracted to the size of a peanut, as it often is, a stone is present within the common or hepatic duct.

There is little likelihood that stones found in the common and hepatic ducts originate in the gallbladder. Stones could rarely pass from the gallbladder through the cystic duct and into the common and hepatic ducts. The process is rather one in which infectious matter originating in the gallbladder constantly bathes the common and hepatic ducts with the resultant production of stones within them. Cholangitis, exclusive of the occasional infected common duct in the absence of stones, is largely related to inadequate drainage of the biliary tract due to common duct stone, which in turn is frequently related to long-standing infection and stones in the gallbladder.

Hepatitis and diminished liver function in biliary tract disease, with the attendant danger of late biliary cirrhosis, for the most part are related to long-standing infection within the common and hepatic ducts. The infection is secondary to stones within the common and hepatic ducts caused by back pressure, stasis, and infection; it is also occasionally due to strictures of the duct secondary to operation or fibrosis of the sphincter of Oddi. Obviously many complications which now result in morbidity and mortality in biliary tract disease could be avoided if the possibility of gallstones were investigated on the basis of fewer symptoms at an earlier stage in the disease. The more frequent employment of cholecystography for indefinite upper abdominal pain instead of haphazard administration of indigestion remedies would result in many earlier diagnoses and, consequently, better handling. To wait for biliary colic is to wait for late stages of biliary disease and the dangers of complications. If patients could be convinced of the wisdom of having diseased gallbladders and gallstones removed at a stage when few symptoms are present and at a stage when they do not want it done, rather than at a stage when the symptoms are advanced and they are begging to have it done, fewer patients would die and many would avoid most of the undesirable complications.

It was an unfortunate day when the term "silent gallstone" originated. There may be silent gallstones, exclusive of the true cholesterol stone. However, they are so rare that we could well dispense with the term. When a patient has gallstones without surgical contraindication, regardless of whether or not the immediate symptoms are urgent, he should have surgery because without operation he is likely to have undesirable symptoms and complications later. The mortality rate in patients having cholecystectomy, including those with advanced symptoms, is now so low (not more than 2 per cent) that I believe early surgery to be a sound position.

The reliance on cholecystography and the rigid application of the advice concerning operation to all patients with gallstones who are good risks, suggest the possibility of unsoundness unless there are certain qualifying conditions. I would not advise cholecystectomy for a patient with vague digestive symptoms and simple nonfilling of the gallbladder without the visualization of stones. On the other hand, with a history of repeated typical gallstone colic, even though stones cannot be demonstrated and the gallbladder empties and fills, I unhesitatingly advise removal of the gallbladder if all other lesions can be ruled out. Several times in such instances BB shot-like stones have been found in the gallbladder and complete relief of symptoms has followed cholecystectomy. Patients with doubtful symptoms and with nonfilling of the gallbladder as the only roentgenographic sign should be

re-examined every 2 or 3 months, and the x-ray studies with dye repeated until consistent filling or nonfilling of the gallbladder is established

ADVANTAGES OF EARLY INTERVENTION

Perhaps early surgery in all patients with cholelithiasis is an impractical idealism; however, the foregoing suggestions could be employed advantageously by many family physicians who first see these patients. More accurate diagnosis could thereby be made of many surgical lesions of the abdomen, particularly those in the gallbladder region, duodenal and gastric ulcer, and gastric malignancy. Any patient with indigestion lasting over a week should have thorough investigation. By this means many early gastric carcinomas would be found and the recurrence rates would be lower; many more ulcers would be diagnosed in the early stages while they were still tractable to nonsurgical management; and many more patients would have gallstones removed before undesirable complications arose. Furthermore, carcinoma of the head of the pancreas and of the papilla of Vater can now be resected successfully if discovered early.

Among patients with vague indigestion and painless jaundice I attempt to separate those with carcinoma of the head of the pancreas, the common duct, or the papilla of Vater from those whose symptoms are due to common duct stone, so-called catarrhal jaundice, or hepatitis. The patient with carcinoma of the head of the pancreas and the papilla should have earlier diagnosis in order to give them the advantage of this relatively new extension of surgery. In many cases the diagnosis should be suspected before the application of the second portion of Courvoisier's law, that is, in the presence of jaundice, a dilated gallbladder is indicative that the obstruction is due to malignancy. When the delay in diagnosis is such as to permit the dilatation of the gallbladder, malignancy in the head of the pancreas, the papilla of Vater, or the common duct has been present for some time. However, these patients should not be denied surgical exploration. If progress in the diagnosis and surgical treatment of early carcinoma of the head of the pancreas or the ampulla of Vater is to be made, physicians must be prepared, after thorough study of patients with painless jaundice, to explore the right upper quadrant, even to the stage of opening the duodenum and investigating the papilla.

If the liver did not possess such great capacity for regeneration and recovery of function, the situation in biliary disease would be a depressing one. I have on several occasions seen patients with common duct stone, cholangitis, and Charcot's fever associated with complete nonfunction of the liver, who, following relief of the obstruction and recovery from the infection, regained complete hepatic function. It cannot be assumed, however, that long-standing common duct stone with back pressure on the biliary tree and chronic cholangitis or repeated attacks of acute cholangitis, does not involve the dangerous possibility of a biliary type of cirrhosis. In spite of the almost traditional attitude that delay in biliary tract disease is harmless, it is obvious that better end results are possible if physicians who first see patients will make earlier diagnoses and urge earlier operative procedures.

INDICATIONS FOR CHOLECYSTECTOMY

Cholecystectomy, now the standard operation for disease of the gallbladder, is so valuable and so often a life-saving procedure that the finding of a diseased gallbladder to explain digestive symptoms is usually a satisfying result of a gastrointestinal survey—satisfying because a definite cure can be offered the patients. Not infrequently, however, a recalcitrant attitude on the part of the patient is encountered, an attitude engendered by the experiences of relatives or friends who still have the same symptoms although the gallbladder has been removed.

A careful analysis of the results of cholecystectomy will reveal varying percentages of poor results. Several factors are responsible. First among these is inaccurate diagnosis of gallbladder disease and, second, inadequate postoperative care of other preoperatively unrecognized digestive abnormalities. To these most common causes of poor postoperative results must be added the failure at operation to locate and remove a common duct stone or a small carcinoma of the head of the pancreas, bile duct, or ampulla. The need for cholecystectomy is well recognized today. Many of the most conservative internists have been converted to the need for cholecystectomy for the so-called silent and presumably single stone. The former often has proved troublesome and dangerous in later years and the latter often has been found to be multiple on cholecystectomy. The diagnosis of cholelithiasis is in itself usually an indication for cholecystectomy even though the usual symptoms are mild or absent. But with more patients being subjected to surgical treatment, the need for accuracy in diagnosis and for the use of every measure to effect good end results has become increasingly important. The accuracy of diagnosis of gallbladder disease depends upon two fundamental factors:

(1) Knowledge of the type of disease requiring surgery

(2) Understanding the criteria by which an accurate diagnosis is made.

Four conditions in the gallbladder require surgery. In the order of frequency of occurrence they are:

(1) Cholecystitis with stones

(2) Acute (sometimes gangrenous) cholecystitis with cholangitis and choledochitis with stones

(3) Papillomas

(4) Carcinoma.

In the diagnosis of cholecystitis with stones, the history plays a very important role, but even the most typical history of colic must be supported by roentgenologic evidence. Other conditions may produce severe colicky pain in the right upper quadrant of the abdomen with radiation to the back, chest, and lower abdomen. From the history alone, three conditions may be easily confused with gallbladder colic. They are:

(1) Coronary thrombosis

(2) Disease of the right kidney

(3) Acute spasm either of the duodenum or of an irritable colon with gas pocketing and spasm at the hepatic flexure.

Occasionally pain from a penetrating duodenal ulcer of the posterior wall of the bulb or of the second part close to the ampulla may be confused with gallbladder disease, especially since in the latter location jaundice results from obstruction of the sphincter of Oddi. The characteristic vomiting of gallbladder disease may occur in all these conditions, although it occurs less frequently in functional disorders. The vomiting is due to the acute pyloric spasm which so

often attends severe pain, even though the cause of the pain is remote from the digestive tract. If the acute indigestion with severe pain is nocturnal in onset, gallbladder disease or the severe type of coronary disease is the most probable diagnosis. Except in the cases of duodenal ulcer close to the ampulla, jaundice with the attacks makes the diagnosis of gallbladder disease practically certain.

In cholelithiasis neither fever nor leukocytosis is necessarily present. An inflammatory reaction within the walls of the gallbladder may vary from mild cholecystitis to the severe gangrenous type with acute localized tenderness, fever, and leukocytosis, with or without jaundice. In the latter group of cases, associated pancreatitis is often present, and the question of the optimum time for operation arises. With modern surgical technics, the risk of perforation, continued toxemia, and dehydration associated with delay is often much greater than the risk of surgery, even in the acute stage, but the decision in the individual case is a matter of clinical judgment.

There is no history characteristic of papillomas of the gallbladder. They are usually discovered through visualization of the gallbladder by the Graham test, and because of their dangerous potentialities, cholecystectomy is usually advised. Carcinoma of the gallbladder is likewise not characterized by definite symptoms, but should be suspected if jaundice and the right upper quadrant distress are progressively severe, especially when accompanied by the gradual onset of the usual suspicious symptoms of progressive loss of appetite and weight. Preoperative differentiation of carcinoma of the gallbladder from carcinoma of the head of the pancreas or bile ducts is usually impossible.

The preoperative diagnosis of gallbladder disease, even though the history and radiologic findings are definite, should be made only after a careful survey of the rest of the digestive tract. The presence of such conditions as achlorhydria, diverticulosis, irritable colon, and, of course, ulcer should be determined preoperatively. All these conditions are frequently found in association with gallbladder disease and it is important to know of them preoperatively, not only because certain of these conditions require special preoperative care, but also because their postoperative management is such a potent factor in effecting satisfactory end results.

The Graham-Cole test has been of incalculable value in the diagnosis of gallbladder disease. So with all such tests its interpretation has developed with experience. For practical diagnostic purposes, two conditions are considered significant. They are:

(1) Failure of the gallbladder to fill with the dye

(2) Consistent appearance of irregular shadows, either radiolucent or opaque, within the gallbladder wall.

I do not usually consider faint filling and slow emptying of serious import unless associated with opaque or radiolucent shadows indicating stones. These less definite findings are due usually to functional disturbances or possibly to mild inflammatory processes which are amenable to nonsurgical therapy.

PREOPERATIVE PREPARATION

Preoperative and postoperative preparation and care are as important to the patient suffering from gallbladder disease as the technic of surgery. No patient undergoing elective surgery should be operated upon without 2 or 3 days of preparation in the hospital. The following preoperative care may not be necessary in all cases but when indicated, it should be carried out. Any acute upper respiratory or other infection must be controlled before surgery is contemplated. Vitamin deficiencies should be corrected; liberal use of vitamin C preoperatively seems to promote wound healing. Vitamin K should be given freely if there is or has been any indication of jaundice or lessened prothrombin time. A roentgenogram of the chest and electrocardiogram are essential if any disease is suspected in the lungs or heart.

Urinalysis and complete blood count are necessary to rule out kidney and blood disease. Blood chemistry studies should include determination of nonprotein nitrogen, urea nitrogen, creatinine, icterus index, prothrombin time, and serum protein and chloride. Adequate fluid balance should be established by liberal intake of glucose and protein. Glucose is given in the form of hard candy by mouth for several days, and 1000 cc. of 5 per cent glucose in distilled water is given intravenously together with amino acids each day during preoperative preparation.

Protein can also be supplied by an adequate meat diet and blood or plasma transfusions. The need is determined by the plasma protein determination. The normal plasma protein is approximately 7 grams per 100 cc., and an attempt is made to have it between 6 and 7 grams per 100 cc. at operation. Wound healing is greatly enhanced and there is less danger of disruption of the wound or postoperative infection when the plasma protein is near normal. Liver function tests, including the hippuric acid test, should be carried out when indicated, if only for protective or prophylactic purposes. If those tests show poor hepatic function, it is wise to postpone the operation until function is improved so that the patient will be in better condition to withstand surgery. Cleansing of the lower bowel by a soapsuds or saline enema the day before operation, and adequate preoperative medication the night before surgery and before coming to the operating room are indicated.

TECHNIC OF CHOLECYSTECTOMY AND CHOLEDOCHOSTOMY

I shall not go into the complete details of the surgical procedures of cholecystectomy and choledochostomy. However, any operation for gallstones should be so planned that not only is it possible to visualize the entire gallbladder and the point where the cystic duct joins the common and hepatic ducts, but also the common and hepatic ducts. The fact that in my experience the common duct is opened very frequently and stones are found and removed in many cases is evidence that the plan of operation should always include demonstration and exposure of these ducts. I have no feeling for or against transverse incisions, but I consistently use the longitudinal right rectus incision, as I have been able to obtain more satisfactory exposure and closure with it than with other incisions. The matter of incision is largely a matter of individual choice. I favor the removal of the gallbladder from below upward whenever possible.

The preliminary control of hemorrhage by ligating the cystic artery before the gallbladder is removed makes the dissection less difficult and more accurate. A gauze pack is always placed in the foramen of Winslow in order to catch any spill of bile or serum. I have never believed in mass ligation of the cystic duct; consequently, it is separately isolated, clamped, severed, and ligated. The artery should first be ligated;

thus the convolutions in the cystic duct tend to straighten out by further traction on the gallbladder after ligation of the vessels, without causing tension on these vessels.

The common duct is always investigated, first by palpation. If stones are palpated, the duct is then opened. If no stones are palpated and there is dilatation, a needle attached to a syringe is inserted into the lumen and bile aspirated. If the bile is golden yellow, it is strongly indicative that stones will not be found; if it is cloudy, thickened, and infected, it is indicative of infection and, usually, the presence of stones. Every dilated common duct is opened. Every common duct with stones is opened. Exploration is made through a small incision placed as close as possible to the edge of the duodenum.

Following the opening of the common duct, it is advisable to aspirate by suction the contents of the hepatic ducts so that the field of operation will not be soiled any more than is necessary. Probes are then passed into the common and hepatic ducts to search for stones. If stones are found, they are removed with various scoops, buckets, and forceps; then a small catheter is passed into the hepatic ducts and irrigation of the hepatic radicals is carried out with saline solution. The catheter is then passed through the common duct toward the duodenum and further irrigation with saline is carried out. Then a T-tube with relatively small arms is placed in the common duct and tightly sutured in place so that no bile can escape around the entrance of the tube. Through a separate stab wound below the right costal arch, a cigaret drain is placed in the foramen of Winslow, for I feel that there is a certain amount of biliary drainage from accessory ducts and from the liver bed which would be harmful if no drain was provided.

POSTOPERATIVE CARE

The postoperative care consists of adequate medication to keep the patient comfortable, liquids by mouth as tolerated, and intravenous administration immediately after surgery or 5 per cent glucose in 1000 cc. of saline solution containing amino acids. This is repeated the following morning. Five per cent glucose, 1000 cc. in distilled water, is given on the afternoon of surgery so as to be finished by 9:00 p.m. and is repeated the following afternoon. The blood pressure is taken every 2 hours for the first 8 hours and three times daily until it is stable.

In cases of shock 250 or 500 cc. of plasma are given as fast as possible, and 1 cc. of adrenal cortical extract every 3 hours until the blood pressure is stable. In cases of bleeding, vitamin K is given and repeated in 4 hours as necessary. Wangensteen suction is instituted if emesis and distension occur. Oxygen, 4 liters per minute, is administered if necessary in marked abdominal distension. A rectal tube is used if necessary for gaseous distress or distension. One ampule of obstetrical pituitrin is given immediately upon return to the room and 8 minims every 6 hours until the third postoperative day. The patient should take deep breaths and move his legs 15 minutes out of each waking hour while confined to bed. This is a prophylactic measure against atelectasis of the lungs or phlebothrombosis in the extremities. An enema is usually given on the third postoperative day. The drain is advanced on the fourth postoperative day and removed at the end of 1 week. The sutures are removed at the end of 1 week. Patients are ambulated immediately.

SUMMARY

The common association of biliary tract infection and other complications with cholelithiasis has been discussed and the following points emphasized:

1. Earlier diagnosis of gallstones as a prerequisite to better end results in the treatment of biliary tract disease
2. Early surgery in all patients with cholelithiasis
3. Early surgical investigation in cases of possible malignancy of the stomach and the head of the pancreas
4. Improved liver function following relief of biliary tract obstructions and infection
5. Necessity of thorough preoperative studies and preoperative preparation
6. Technic of cholecystectomy and choledochostomy with special reference to the importance of investigation of the common duct
7. The postoperative care of patients and essentials for maintaining a normal electrolytic and fluid balance.

514 Beacon Street

CONGENITAL ELEPHANTIASIS ASSOCIATED WITH CONSTRICTION BY ANOMALOUS BANDS

Congenital constricting bands of the extremities are not rare. They vary in position, depth, and completeness of encirclement, and they often represent one of a group of abnormalities present in the same infant. Although gross lymphedema is rarely associated with them, in the *Journal of Bone and Joint Surgery* (British volume), November 1948, A. W. Farmer reports surgical treatment in such a case.

The patient was a 4 month old boy with multiple congenital deformities of the hands and feet. The tips of the index, middle, and ring fingers of the right hand were fused; each finger had one large and one small phalanx; and the thumb had only one phalanx. The tip of each finger of the left hand was missing, each finger having but one phalanx, but the thumb was normal. The big toe and parts of the other toes of the right foot were missing. Above the malleoli of the left ankle a tight constricting band completely encircled the limb, and below it there was such enormous swelling and lymphedema that it was almost impossible to recognize the shape of the toes. Roentgenograms showed great soft tissue thickening, but the bones were normal.

Operation on the left leg was done in three stages, separated by approximately two week intervals. The first two operations were similar in nature. In the first, a strip of tissue ¼ inch wide and the length of the anterior half of the constricting band was excised in the line of the band. Clear fluid flowed from the incision as blood might flow from a large vein; this fluid contained only 2.2 grams of protein (albumin only) per hundred cubic centimeters and only a few lymphocytes; it did not clot, even after several hours. At the second operation the procedure was repeated on the posterior half of the band. At both procedures Z-plasties were done; flaps were transposed from the normal area above into the abnormal area below on such a large scale that the indentation was removed from the whole circumference of the limb. After the first stage there was remarkable shrinkage of tissues. At the third stage, skin and subcutaneous tissues were removed from the dorsum of the foot down to the deep fascia. Part of the skin was converted into a free full thickness graft by excision of all subcutaneous fibrous tissue; the graft was then replaced and a pressure dressing applied. There was some loss of skin in one area, which was replaced by a split thickness graft. By the time of discharge, the foot was of almost normal appearance, and re-examination several months later showed a satisfactory cosmetic effect and excellent function. There had been no recurrence of swelling or enlargement of the limb.

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The Relationship of the Referring Physician the Internist and the Surgeon

FRANK R. SPENCER, D.O.
Columbus, Ohio

In this discussion concerning the relationship between the referring physician, the internist, and the surgeon, I want to present certain facts and ideas for your consideration that I believe will benefit your staff organization.

THE REFERRING PHYSICIAN

The referring physician is, and will continue to be, the backbone of any progressive hospital. The referring physician serves the family and becomes very well acquainted with them. This is highly important in any community. I believe sincerely that the general practitioner has just as great an opportunity for accomplishment in his community as the specialist and I think that his financial returns can be on the same level. The general practitioner is a man who has graduated from his professional college and in many instances has served an internship but has not taken extensive graduate work. He has a wide field. He delivers babies, takes care of routine problems of a general practice, sets uncomplicated fractures, and usually does a certain amount of minor surgery. He does not have the skilled knowledge of a specialist. Remember here, that the specialist should stay in his own particular field and seek further knowledge so that he will be more helpful. The general practitioner must be helped and many times protected by both the internist and the surgeon.

The day is past when the general practitioner, the internist, or the surgeon can walk into a patient's room, make a short study, and arrive at a correct diagnosis. It has been adequately demonstrated that "snap" diagnosis is usually poor diagnosis. Of course, diagnosis can be made with little trouble in certain cases such as coronary thrombosis with classical symptoms, perforated peptic ulcer, or cerebral hemorrhage, but the vast majority of cases that come under our observation are much more complex.

There has been a tremendous advance in medical knowledge in the past 10 years. This includes new diagnostic and therapeutic measures. The public is alert to these things because they are discussed constantly in the papers, magazines, over the radio, and in meetings. It behooves each of us to give accurate answers to patient's questions. This calls for keeping up with progress in medicine.

Too many general practitioners send their patients into the hospital for x-rays and laboratory procedures and the roentgenologist or the laboratory makes the diagnosis. Many times this is not as it should be because there are many facts to correlate and the sound clinical judgment of an experienced clinician is needed to clarify many cases.

Both the surgeon and the internist are quite often put on the spot because the referring doctor has told the patient he has certain conditions. He is sent to the hospital expecting the internist to come up with the right answers within a short time, say a 24-hour period. Patients come to the surgeon expecting him to perform certain surgery. Perhaps upon examination the surgeon finds that he has a different opinion from that of the referring doctor. This is embarrassing to both the referring doctor and the surgeon if the patient has been given a diagnosis.

Some general practitioners are prone to wait too long before sending their patients to the hospital. They may have been treating patients for weeks or months when they suddenly discover that the patient is involved in a serious problem, either surgical or medical. It is not fair to the internist or the surgeon to have this happen, as sometimes a few hours makes a difference between life and death.

The referring doctor, or the general practitioner, is a highly respected member of the hospital staff; he is charged with the responsibility of cooperating completely with both the internist and the surgeon so that the patient may receive the best in hospital service.

THE DEPARTMENT OF INTERNAL MEDICINE

Each hospital should develop a sound department of internal medicine. This department should be made up of men who have by experience, skill, and judgement shown that they can handle the serious medical complications and diseases. This includes the proper analysis and correlation of facts from the history and physical findings of the patient, with the help of the roentgenologist, the laboratory, and consultations with the surgical staff in the various specialties. If this department of internal medicine is to function properly it must have the cooperation of both the referring physician and the surgeon. The medical department's responsibility is equal to the surgical department's responsibility and should be so considered. If there is proper consultation and working relationship between the surgeon, the internist, and the referring doctor it will lead to much better service to the patient.

THE INTERNIST

The internist's job is to stay in his own specialty and support both the referring doctor and the surgeon by his special skills. The internist must have the ability to arrive at an accurate diagnosis so that a therapeutic regime can be administered without delay. He should insist on the x-ray and laboratory procedures necessary to back up his diagnosis.

The internist can relieve the surgeon of many cares and worries. He can also help the referring doctor and elevate the patient's regard for the institution and the referring doctor if he does his job properly. The internist may be called in for any of the following:

1. *Diagnosis Only.*—It should be remembered that from the hospital standpoint those patients hospitalized for diagnosis only are an important source of revenue because of the type of service rendered. Every hospital should develop this type of service. It is highly important for the internist to correlate the facts and use his best clinical judgement in evaluation of the patient.

2. *Diagnosis and Helping the Referring Doctor.*—It is quite helpful to the general practitioner to have someone to call on to work out the more difficult medical problems and to outline treatment.

3. *Postsurgical Complications.*—In making rounds and visiting patients after operation, it has been my

experience that medical complications are found earlier if an internist has been consulted. Quite often serious problems are avoided by instituting medical treatment early. It is not wise to allow interns and residents to accept this responsibility.

4. *Consultation in Obstetrics.*—All obstetrical patients who have medical problems and complications should have the advantage of medical consultation. I have found many times that in the toxemias of pregnancy with hypertension the nonprotein nitrogen, the blood urea nitrogen and the results of kidney function tests may not be far from normal limits but that it is very dangerous to delay in instituting the proper therapeutic regime. Consultations with the internist on tubal ligations, cesarean sections, and therapeutic abortions also are important in order to protect the hospital from criticism. In obstetrics the patients with cardiac complications and diabetes need special care and must be watched closely by someone who is qualified to render this service.

5. *Preparation of Patients.*—In numerous surgical patients with medical problems such as diabetes, thyrotoxicosis, and cardiac complications it is necessary for the internist to assume control of the patient and to advise the surgeon when the optimum time for surgery is at hand. It is also necessary to follow these patients closely postoperatively and to advise the referring doctor of treatment necessary after the patient is released from the hospital.

6. *Evaluation of Cardiac Status.*—One of the most important functions of the internist is the evaluation of the cardiac status of the patients. It is always a comfort to the surgeon to have this before surgery and to know what risks are involved. Sometimes it is necessary to delay surgery so that the patient may be prepared to go through the operation without trouble. If this is not done, the postoperative course may be very stormy.

7. *Observation for Complications of Medical Nature.*—In the evaluation of cases before surgery I believe that a chest x-ray, blood sugar determination, and electrocardiogram are essential if the patient is past 40 years old. I believe that preoperative chest x-rays and blood sugar determinations are essential in practically all patients, in addition to the routine laboratory procedures.

Many gallbladders are removed because the roentgenologist reports a nonvisualizing gallbladder or gallstones. If the liver and pancreatic function are not studied the patient may run into serious difficulty because he may have residual hepatitis or pancreatitis. Serious postoperative complications such as liver failure with its associated uremia may develop in these patients.

The diabetic patient always presents a serious problem but can usually be prepared and carried through surgery without serious trouble. It is not pleasant to see patient go into diabetic coma following surgery when it could have been prevented by adequate preoperative care.

In thyrotoxicosis the preoperative and postoperative care should always be handled by the internist and the internist should advise the surgeon when the patient is ready for surgery. Many complications would be avoided if this procedure were followed.

Many other patients require special care—those with asthma, congenital heart conditions, anemia, etc. However, I feel that I have made clear the value of the internist and his duties to both the referring doctor and the surgeon.

The internist must use judgement in ordering laboratory and x-ray work so that the patient's bill does not go too high. He must also see that there is no duplication in laboratory orders. Overlooking these points discourages the hospital staff from calling in certain internists. I think a frank discussion of this problem should be had with those internists so that the oversight may be corrected. However, it is important to be sure that the patient is covered adequately by x-ray and laboratory examinations and by consultation with the surgical staff.

COOPERATION BETWEEN REFERRING PHYSICIANS AND SPECIALISTS

After traveling from California to Maine and observing hospitals, I can see plainly that there has been a rapid growth of osteopathic hospitals in our profession. Many groups are planning to build hospitals in towns and cities that do not have them at the present time. In many places existing hospitals are expanding because there is a crying need for more hospital beds. Many times these institutions have been started by one or two men and while they have a tight and well-organized surgical department, they have not encouraged a strong and well-developed medical department.

It is easy for a surgeon to assume responsibility on medical problems that should be in the hands of an internist. Some surgeons, usually young surgeons, are prone to carry the whole burden themselves, believing that the patient's bill will not be as high or that it lowers their position in the eyes of the referring doctor to ask for medical consultation. After surgeons find that working with an internist helps lighten their work and makes for more efficient service to the patient they usually welcome this assistance. It is difficult for the medical staff to handle their responsibilities if they are not called upon and encouraged by the surgeons.

It is an accepted fact that the American College of Osteopathic Surgeons has background, experience, and the respect of the profession. It has taken a tremendous amount of work and the sound thinking of men with vision to accomplish this. Ten years ago a surgical mortality rate of 3 per cent was fairly common while today it is only about 2 per cent, and in some of the better institutions it approaches 1 per cent. This has not just happened; it has been due to accurate diagnosis, adequate preoperative care, improved surgical skill, and better postoperative management. These facts show a very distinct progress.

The relationship between the referring doctor, the internist, and surgeon must be kept on a high level and ethical standards must be observed. It is not difficult for the surgeon to advise the referring physician that the internist is responsible for the working up of cases; it is not difficult for the surgeon to advise the referring physician to have medical consultation on surgical patients, nor is it difficult for the internist to advise the referring doctor to have surgical consultation. The referring doctor must give his consent for such a consultation. It is never proper for one specialist to ask another specialist to see a patient without the consent of the referring doctor. I have observed specialists who invite other specialists to observe and operate without permission from the re-

ferring doctor. This is bad practice and should not be permitted on any hospital staff.

I would like to encourage every hospital to have on its staff men who are adequately trained to work as a group so that the patients may have the benefit of the advice of the various specialists in their respective departments. When patients have several problems it is the responsibility of the internist to correlate the facts and his clinical evaluation should determine the problem to be approached first.

The commonest cause of malpractice suits is incorrect diagnosis and many courts feel that the doctor of today either has at his hands or is able to call men who have the equipment and knowledge to make accurate diagnosis and that failure to do so constitutes negligence. This is another reason for each hospital to develop a strong medical staff.

The Bureau of Hospitals of the American Osteopathic Association expects each hospital accepted for intern training to have an adequate medical staff as well as surgical, roentgenological, and obstetrical departments. The records in our hospitals show distinct improvement but can still stand further improvement.

My hope in preparing this paper is that you will take back to your hospital organizations a realization of the necessity and advisability of a unified and progressive department of Osteopathic Internal Medicine. I feel certain that the surgeons who recognize this need are perfectly willing and happy to have on the staff with them men who are certified and qualified in the department of internal medicine.

Teamwork in a hospital makes a progressive and respected institution. It has been my experience that the more cases that have been examined by the internist the more surgical problems have been found. It is only by the solid cooperation of the surgeons, internists, and referring physicians that it is possible to round out sound hospital care. I feel strongly that the various specialty groups should stay in their own specialty as this makes for greater harmony on any hospital staff. We must all depend on the advice and counsel of each other on various problems. This will make our institutions stronger and more efficient.

40 W. Third Ave.

DISCUSSION

JAMES O. WATSON, D.O., F.A.C.O.S., Columbus, Ohio: Mr. President, Dr. Spencer, and Members of the Assembly: It is a real pleasure to step out of the position of Program Chairman and participate in the program as discussant of Dr. Spencer's most excellent paper. Certainly the question of the relationship of the surgeon, internist, and the attending physician is a very important one in hospital activities. It seems to me this is a problem of our profession that, to some extent, is related to the youth of our profession, in comparison to old school medicine.

When I graduated in June of 1926, I was one of a class of 125 not 10 per cent of which sought or was afforded the opportunity to serve an internship. That year, I believe, the American College of Osteopathic Surgeons was founded by a small group of osteopathic surgeons. There were, at that time, but a handful of osteopathic hospitals. Since that time, our profession has grown considerably in all respects, including the development of osteopathic hospitals, until now there are in excess of 300. It is immediately obvious that in this very short period the bulk of our specialists—surgeons, internists, and others—have developed.

In the last 10 years, and particularly since World War II, our doctors and our hospitals have had a great added responsibility placed upon them. The public has learned that osteopathic doctors and osteopathic hospitals and clinics render a satisfactory and competent health service in all of the fields of medicine. This has resulted in a tremendous growth of our institutions and the use of them by the public. As this growth has been rapid, training of interns and of residents in the various specialty fields has had some difficulty in keeping pace.

Now osteopathic hospitals are establishing residencies to train surgeons, internists, and other specialists, but there are still not enough residencies to meet the demand. Some men are being trained on a preceptor basis. There has been a gradual increase of osteopathic specialty boards to evaluate and to certify those who have had adequate and thorough training. During this time, we have been endeavoring to establish high standards of postgraduate training for surgeons, internists, and others. In the process of this we are looking at ourselves with a rather critical eye to determine whether or not our methods of training are adequate and whether they are producing good products. The fact that we are examining critically our postgraduate teaching procedures is evidence in itself of a maturing development and growing sense of responsibility.

Dr. Spencer has pointed out to you in his paper that in this last decade of medical and scientific progress the laity has become well informed concerning many aspects of medical practice and what constitutes good medical management and therapy. In fact, the lay person of today who is well read may have more medical knowledge than many doctors of 35 or 40 years ago. In this process the public has come to recognize the results of medicine as practiced in the great clinics and medical centers and to realize the efficiency and value of group medicine and diagnostic procedure in the hands of specialists working in association with the attending physician. This is having the effect of educating people to believe in the cooperative effort of physicians, rather than in the lone effort of a single doctor. These are things that are very definite, and if one fails to recognize these developments, I believe that he is not keeping abreast of changing medical practice. The day of the one-man institution, of the snap diagnosis, and of the exploratory operative procedure is about over.

On the other hand, the day is here when hospital staff membership is a valuable asset and should be recognized as such by every doctor. Each of us must learn to recognize full well the value and efficiency of understanding others, of making use of their abilities, knowledge, and special skills. We must improve the efficiency with which we manage patients and must afford opportunity to the men who have become trained specialists in the specialty fields to develop, grow, and make use of the knowledge and skills they have acquired. We must also afford opportunity for the training of additional men in the specialty fields. This must all be done because it is a better way to practice medicine. It is a better way to investigate and evaluate the human body and the diseases to which it is heir. It is a better way to plan and manage treatment to the end that the prime purpose of the practice of the healing art—that of healing the sick—will be satisfied.

This is the day of group practice when patients expect good care and adequate investigation. It is, therefore, the day when the surgeon, internist, and the attending doctor must improve their relations and cooperate with each other in the best interest of improving the health and well-being of the citizens of the United States.

50 E. Broad Street.

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Vascular Surgery*

W. DONALD BAKER, D.O., F.A.C.O.S.
Associate Clinical Professor of Surgery
College of Osteopathic Physicians and Surgeons
Los Angeles

INTRODUCTION

The scope of vascular problems has been defined by Allen, Barker, and Hines[1] as ". . . diseases of all vessels distal to the heart." With this broad concept of peripheral vascular disease, it will be necessary to limit the discussion of each of the following vascular problems to a descriptive definition, where it seems to be indicated for purposes of clarification, and a discussion of the indications, contraindications, and principles of surgical management.

With this in mind the vascular problems under discussion will be presented under the following headings:

1. Portal and pulmonic obstructions
2. Aortic arch anomalies
3. Aneurysms
4. Arteriovenous fistulas
5. Vascular trauma
6. Occlusive arterial disease
7. Thromboembolic disease
8. Varicose veins

PORTAL AND PULMONIC OBSTRUCTION

The most recent of vascular surgical procedures are known as shunt or by-pass operations for the correction of altered physiology of the organs involved. Indeed, they may well be the beginning of a large series of surgical procedures designed to alter or correct the physiology of organs by altering or correcting their blood supply. Blalock[2] states that in the past major emphasis in surgery has been concentrated on the removal of diseased tissues or abnormal growths. Better means by which various structures may be removed will be developed, but the scope of surgery by extirpation cannot be extended greatly.

The surgical alleviation of portal hypertension, whether the obstruction is extrahepatic or intrahepatic, is accomplished in one of two ways: First, by anastomosis of the splenic vein to the left renal vein with or without splenectomy, and, second, by anastomosis of the portal vein to the inferior vena cava. The portacaval anastomotic procedure is probably the one of choice unless a congestive splenomegaly is present due to extrahepatic blockage, thus necessitating splenectomy. Likewise, the portacaval shunt is more likely to remain open due to the increased pressure in the portal vein. It is accomplished by anastomosing the severed end of the portal vein to the side of the inferior vena cava. In the case of splenorenal anastomosis, a side-to-side procedure is employed unless splenectomy is performed, in which case an end-to-side procedure has a better chance of remaining open. Blakemore[3] reports 14 cases, using the above procedures, with 2 early postoperative deaths but with considerable improvement of the majority of the surviving patients.

The most frequently encountered type of congenital cardiovascular defect is known as the tetralogy of Fallot, which is characterized by pulmonic stenosis or atresia, interventricular septal defect, dextroposition of the aorta, and right ventricular hypertrophy.

In any discussion of the surgical procedures designed for the correction of pulmonic stenosis it must be remembered that they are procedures of utmost gravity, which at the present time are attended by a high mortality. Blalock[4] reports, for example, 25 deaths out of 110 cases operated upon for congenital pulmonic stenosis or a 23 per cent mortality rate. However, when it is realized that infants and children suffering from this congenital anomaly have been presented with an utterly hopeless future as a result of tissue anoxemia,[5] the surgical risk is probably indicated.

In the past, attempts have been made to relieve the stenotic pulmonary artery, the obstructive site of which is usually very near to the pulmonary conus, by incision or excision of the stenosed area. These trials have met with universal failure.

In 1945 Blalock and Taussig[6] introduced a new surgical procedure for the relief of anoxemia due to pulmonary atresia, which consisted of the direct anastomosis of either the subclavian or innominate arteries to either the right or left pulmonary arteries, thus increasing the flow of blood to the lungs. Their work is an outstanding contribution to the relief of children whose outlook without aid is hopeless.

Recently there has been reported[5] the successful creation of an artificial ductus arteriosus by the direct anastomosis of the aorta to the adjoining pulmonary artery. This was made possible by the use of a new type of arterial clamp which, when closed, permits the punching off of a small, but sufficiently large section of the aorta to allow room for an anastomosis, in much the same manner as intestinal clamps are used in gastrointestinal anastomotic procedures. This clamp was necessary as it had already been shown by Gross and Hufnagel[7] and Blalock and Park[8] that clamping off the aorta for any considerable length of time led, in a fair percentage of animal experiments, to paralysis of the hind legs caused by temporary anemia of the spinal cord.

AORTIC ARCH ANOMALIES

Gross and Ware[9] give an excellent resume of the more common aortic arch anomalies. Many of these do not give rise to important disturbing symptoms but others have considerable surgical significance. They are as follows:

1. Right-sided aortic arch which cannot be changed surgically, except in an occasional case by the division of a coexisting ductus arteriosus or ligamentum arteriosum, thus allowing the pulmonary artery to fall forward and away from the trachea. Patients with this abnormality frequently show dysphagia, stridor, dyspnea, cyanosis, hoarseness, cough, pain in upper chest, and vague sensations in the arms, to a greater or lesser degree, all due to esophageal or tracheal compression or both by the anomalous vessel or vessels.

2. Double aortic arch which may produce the same symptom complex and which is relieved by sec-

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tioning the anterior limb, thus breaking the compressing vascular ring around the esophagus and trachea.

3. Anomalous right subclavian artery which originates from the left side of the aortic arch and presses on the posterior wall of the esophagus as it passes to the right side. This produces the symptom complex known as dysphagia lusoria, first described by Bayford in 1794 as due to a "trick of nature." It is readily corrected by simple ligation and division of the artery at its point of origin, thus relieving the esophageal pressure.

4. Patent ductus arteriosus. The ductus arteriosus is a shunt between the aorta and the pulmonary artery. It is essential during fetal life but after birth it normally becomes obliterated and forms the ligamentum arteriosum. The surgical correction of this congenital defect is indicated during childhood for the following reasons:[10] First, so much blood may be diverted from the peripheral circulation that physical development is retarded; second, the large amount of blood which is forced through this arteriovenous type of communication (it must be remembered that the pulmonary artery carries venous blood) greatly increases the work of the heart and leads to varying degrees of cardiac embarrassment or failure, and, third, this abnormality may become a focus of infection especially with Streptococcus viridans organisms producing a subacute endarteritis.[11]

The simplest surgical procedure for closure of this defect is obviously ligation in continuity. Gross and Ware[9] reported 80 per cent perfect results in 43 cases. In 10 per cent the ligature partially cut through and some fistula was re-established, and in 10 per cent the ligature was not tied tightly enough to close off all of the shunt. This experience led them to adopt a technic of complete division of the ductus by the application of four narrow clamps with sectioning between the two middle clamps. Following this the two middle clamps were removed to provide a cuff which was sutured with a fine running continuous suture. They report 87 cases with only 2 surgical fatalities and no recurrences.

5. Coarctation of the aorta is a congenital narrowing or complete occlusion of the aortic pathway. It has been found in the abdominal and lower thoracic portions of the aorta but in the vast majority of cases it is located in the distal segment of the aortic arch. This problem is conducive to the development of an early hypertensive state, signs and symptoms of greatly diminished arterial circulation to the lower extremities, and early development of aneurysm or rupture.

Gross and Ware[9] reported 5 cases operated upon by resection of the constricted portion of the aorta followed by an end-to-end anastomosis. They report 1 fatality, their first case, which was due to the sudden removal of the clamps after anastomosis was complete, thus abruptly opening up an enormous vascular bed in the lower part of the body, with which the heart was unable to cope. In subsequent cases the clamps were removed slowly, over a 5 to 10 minute period, allowing time for adjustments in the cardiovascular apparatus.

ANEURYSMS

An aneurysm is a permanent abnormal dilatation of an artery resulting from localized weakness and stretching of an arterial wall. From a pathologic standpoint, aneurysms are divided into four general types: fusiform, saccular, dissecting, and false, depending upon the relation of the dilatation to the circumference and to the coats of the artery. Syphilis, arteriosclerosis, and trauma are the etiological agents. Any part of the arterial system may be involved. The most common sites are the aorta and the arteries of the extremities.

The surgical correction varies with the location of the aneurysmal lesion. Those of the thoracic and abdominal cavities present a very grave prognosis. Death usually occurs from rupture within 6 months from the onset of symptoms.[12] Because of this, surgical correction is indicated, if possible, even though, as is usually the case, the patient is a poor surgical risk. Abdominal aneurysms usually start "leaking" before they rupture and the spreading retroperitoneal hemorrhage frequently presents a diagnostic dilemma. It is interesting to note that the duration of life following onset of the "leak" has been found to be 3 to 4 days, which permits the saving of some of these patients by early operation.[12]

Surgeons have long recognized the extreme danger of ligation in continuity of a vessel the size of the aorta by unyielding constricting agents. Hemorrhages from pressure necrosis or restoration of vessel lumen have been frequent complicating factors. This has led to the development of the two-stage endarterial occlusion of the aorta proximal to the aneurysm, with obliteration of the aneurysmal sac. This treatment for aneurysms of the aorta arising distal to the renal arteries is accomplished by employing a wiring method of endo-arterial occlusion with obliterative electrothermic coagulation of the aneurysm (obliterative endo-aneurysmorrhaphy).

DeTakats[13] recently reported the use of nonconstricting eight-ply layers of cellophane applied as a 1 inch band just proximal to the aneurysmal sac, which seems to cause the slow production of fibrosis, thus gradually shutting off the supply to the aneurysmal sac.

The operative treatment for aneurysms of the extremities, regardless of etiology, should be directed toward eliminating the aneurysm without interfering with the necessary collateral circulation.[14] This may be accomplished by any one of the following operative procedures.

1. Excision with end-to-end anastomosis
2. Excision with vein transplant
3. Obliterative endo-aneurysmorrhaphy
4. Proximal and distal ligation with excision of the sac.

The location, size, and extent of the aneurysm should determine the ideal procedure for any given case.

The literature contains many reports on the surgical care of aneurysms in all parts of the body. Marrone[15] reports a rare case of large aneurysm of the renal artery treated by nephrectomy, reparative operation being impossible. Zuckerman and Proctor[16] report the successful removal of a terminal ulnar and superficial arch palmar aneurysm by proximal and distal ligation with local excision of the sac. Trent[17] reports complete disappearance and clinical cure of a syphilitic aneurysm involving the innominate artery by ligation proximally, using rubber bands. Ligation of the common carotid artery has been utilized in the treatment of intracranial aneurysms.[18]

ARTERIOVENOUS FISTULAS

These fistulas are frequently referred to as arteriovenous aneurysms. Because of the abnormal communication between the arterial and venous sys-

tems there exists, in addition to the hazard of rupture and pressure symptoms, the risk of cardiac strain with resulting decompensation if the fistula is of sufficient size. There are two types recognized, congenital and acquired.

Congenital arteriovenous aneurysms are found in young people and present themselves clinically as pulsating tumors over which there is a loud continuous bruit and a palpable thrill, together with hypertrophy of all of the vascular elements. Surgical correction is imperative as life and limb are endangered. Attempts at local excision, as in an ordinary tumor mass, will always end in an uncontrollable hemorrhage. The successful surgical attack depends on the control of the main arterial trunks proximally and distally. Resection of the tumor mass after quadruple ligation with or without restoration of vascular continuity is imperative.[19]

The acquired type is usually the result of trauma, although an appreciable number of cases are seen in arteriosclerotic individuals, due to erosion through an arteriosclerotic plaque into a companion vein. When due to trauma, it is frequently days or weeks before the characteristic tumor mass appears with its palpable thrill and bruit. Frequently the tumor mass is not visible due to the location of the vascular injury, as within the abdomen or under heavy fascial planes.

Warfare injuries and civilian accidents contribute an appreciable incidence of arteriovenous fistulas.[20] Numerous cases of surgical origin have been reported when a needle used for the purpose of transfixion passed inadvertently through artery and companion vein.[21]

Heringman and others[22] recommend the following methods of handling these problems:

1. Quadruple ligation with excision. This is the most frequently employed method of surgical correction, but it presents the following disadvantages:

First: It requires ligation of a main arterial pathway which in many cases results in chronic postoperative arterial deficiency distal to the site of the resected lesion. Occasionally even gangrene may develop, especially if sufficient time has not been permitted to elapse following the original injury for development of an effective collateral circulation.

Second: The time-consuming tedious dissection around the sac frequently results in the destruction of some of the necessary anastomotic channels.

2. Transvenous arteriorrhaphy. The technic of this ideal restorative procedure is adequately described by Heringman and others.[22] Its chief advantage is the preservation of the main arterial pathway.

3. Intrasaccular obliterative endo-aneurysmorrhaphy. The advantages of this method are that it cures the fistula while preserving the collateral channels even though the main arterial pathway is obliterated.

4. Vitallium tube venous graft. This new procedure described by Blakemore and Lord[23] still requires extensive clinical trial before it can be evaluated accurately. However, it does restore the arterial pathway and eliminates the pathologic segment of the artery.

VASCULAR TRAUMA

At the onset of the World War II, the sum total of previous experience with acute vascular injuries had resolved itself into two axiomatic statements: First: Companion vein ligation when arterial ligation was deemed necessary and, second: Ligation, if possible, immediately caudal to the last large branching vessel above the injury. From this meager beginning great progress has been made. Although the field of vascular surgery may at times be felt to be too specialized to be of general interest, all surgeons should be able to appraise properly the emmergent situation with which he is confronted when vascular complications of injured extremities are present. He should have a ready appreciation of the sequelae of vascular injury at the various levels so that he can at least decide between a conservative or a more radical type of management.

The principles of management as reported by Snyder[24] in 108 cases of vascular wounds during the battle of Ardennes are as follows:

1. Vascular reconstruction when possible
2. Routine sympathetic block at 12-hour intervals
3. Reduction of metabolism of the extremity by means of cooling.

He reports the following observations:

1. Critical sites of injury are the brachial and femoral arteries, above their profunda branches, and the popliteal arteries.

2. Ligation below these critical sites, in the absence of extensive wounds and tissue damage interfering with collateral circulation, generally will not result in loss of the extremity.

3. At the critical sites, every effort should be made to repair the vascular defect by arterial suture, vein transplant, glass tubes,[25] or thrombectomy, even in the absence of anticoagulants, vitallium, or plastic tubes.[23] The temporary partial maintenance of circulation to an extremity following anastomosis may be adequate for preserving a viable extremity or, if secondary thrombosis does occur, it may allow sufficient time for the development of collateral circulation. This may be at least enough to allow the final level of gangrenous demarcation to be distal to a joint which might otherwise have had to be sacrificed.

4. Routine sympathetic blocks and cooling during the postoperative period increase the amount of limb saved. They also favor the development of a dry, rather than a moist, type of gangrene.

5. The incidence of pulmonary embolism is significant in extensive injuries to the extremities when major vessels are involved.

6. In the presence of associated major fractures, collateral circulation is less likely to furnish adequate sustenance for the injured limb. The prognosis is influenced accordingly.

7. In injuries to major vessels, and especially in cases where explosive missiles have passed close by, thrombosis of major arteries is very frequent. In severed vessels this may be temporarily life saving and allow sufficient time for the placement of a temporary proximal control tape or ligature. This latter preliminary procedure is mandatory in the management of major vessel injuries if repair is contemplated. It also saves unnecessary loss of blood during debridement.

8. In all major wounds of the extremities the status of the circulation should be recorded immediately and watched carefully during operation and the postoperative period. A warm extremity is always a good prognostic sign, even when peripheral pulsations are absent.

9. When major vessels must be ligated, the chance of maximum collateral response seems greatest

if ligation is performed as close distally to the last proximal major branching vessel as possible.

OCCLUSIVE ARTERIAL DISEASE

Under this heading will be found conditions which, in the past, have been the least understood, the most discouraging to treat, and the most frequently misdiagnosed of any of the problems confronting the surgeon. Fortunately, in the past few years, the specialty of peripheral vascular disease has progressed rapidly, and many eminent surgeons, internists, and research scientists have attacked the problem, with a result that many of the differential diagnostic problems have been clarified. This has changed the prognosis from one of hopelessness to one of justifiable hope. This change has been brought about, as is the case with most medical progress, by a more complete and better understanding of the basic pathology involved.

Occlusive arterial disease may be divided into organic and vasospastic types depending upon whether the basic pathology is characterized by organic occlusion of the arterial lumen or by a vasospastic contracture or occlusion induced by abnormal peripheral sympathetic impulses. However, this division is of little practical use in light of recent investigation,[26] which tend to show that all organic occlusive arterial problems have, to a greater or lesser extent, a superimposed vasospastic state due probably to reflex sympathetic irritation by the organic occlusive process. This concept has opened up an entire new therapeutic field in the handling of these problems, that of neurosurgery or, as the authors refer to it, neurovascular surgery.

Arteriosclerosis obliterans, thromboangiitis obliterans, and acute arterial occlusions are the three common organic occlusive arterial problems and the surgical attack, of the uncomplicated case, can be expressed in one word: sympathectomy. Whether the cervicodorsal or lumbar chains or both are resected depends upon the extremity or extremities involved. The more extensive thoracolumbar procedure of Smithwick[27] is reserved for the surgical correction of essential types of hypertension, which have not progressed to the irreversible stage.

The indications for sympathectomy, in uncomplicated organic occlusive arterial problems, may be expressed as follows. They exist in any case which exhibits significant demonstrable subjective and/or objective improvement following the release of vasospastic impulses, by lumbar or cervicodorsal paravertebral procaine block or by pharmacological means. The demonstrable improvement may be shown by increased peripheral skin temperatures, increased oscillometric readings, partial or complete relief of intermittent claudication, as shown by increased ability to ambulate or by elimination or reduction of rest pain.

The contraindications to sympathectomy deal with the ability of the patient to withstand the surgical procedure, i. e., poor surgical risk patients. It must always be remembered that many patients with organic occlusive arterial disease show extensive arteriosclerotic involvement elsewhere in the body, which may contraindicate increasing their ability to ambulate.

The only other surgical procedure in use today for the above mentioned conditions is embolectomy, which may be used in cases of acute arterial occlusion if it can be shown that the occlusion is of embolic origin and not superimposed on an arteriosclerotic state. Embolectomy, to be successful, must be performed within a few hours of the onset of the acute occlusion, unless adequate anticoagulation therapy has been administered immediately, in which case embolectomy may be delayed for from 24 to 36 hours with reasonable chances for the restoration of the main arterial pathway.

The patient with complicated organic arterial disease was, until very recently, probably the victim of the greatest possible degree of surgical overzealousness on the one hand and surgical neglect on the other. The more radical surgeon, at the first sign of impending or actual gangrene, resorted to mid- or high-thigh amputation with a resulting loss of many extremities, or the loss of many joints, which could otherwise have been saved. On the other hand, the ultra conservative surgeon delayed amputation until the toxic state of the individual was such as to render him a very poor surgical risk, or to refuse him amputation altogether because of his debilitated state.

The vascular surgeon has been instrumental in the development of two new forms of surgical therapy, sympathectomy and refrigeration. These developments have revolutionized our concepts regarding the handling of the gangrenous extremity. DeTakats and others[26] report results as follows: First group, sympathectomy resulted in a dramatic increase in walking ability; second group, by sympathectomy, amputation was averted; third group, amputations were performed at much lower levels than would have been possible without sympathectomy; fourth group, sympathectomy resulted in relief of intractable neuritic pain of the causalgic type.

From the preceding it can be readily seen that any patient suffering from organic occlusive arterial disease, affecting his extremities and complicated by a threatened or actual gangrenous process, deserves sympathectomy before amputation providing that: First, the gangrenous process has not extended to a point where amputation below the knee would be impossible; second, the patient's general condition is not such that the shock of a second surgical procedure might be lethal; third, there is no other advanced pathologic process affecting other organs of the body, which might contraindicate efforts to increase the patient's ability to ambulate.

The use of refrigeration in surgery dates back only a few years. In 1941, after several years of animal experimentation, Allen[28] showed clinically that a tourniquet could be applied to a limb and the part distal enveloped in ice to produce adequate surgical anesthesia. McElvenny[29] introduced the principle of preoperative physiologic amputation with refrigeration. He proved that the extremity could be kept refrigerated 8 hours or 8 weeks, depending on the condition of the patient, or until adequate preoperative measures were taken. The writer has had extensive experience with this method and concurs with these findings.

Massie[30] gives the following excellent summary in regard to refrigeration and refrigeration anesthesia:

1. Experimental and clinical observations have proved that living tissue is viable when completely asphyxiated (with tourniquet) for many hours if the temperature is kept between 33 F. and 40 F.

2. When tissue is to be removed later (by amputation), this time may be extended to many weeks.

3. Cooling tissue by an ice pack, with or without a tourniquet, will stop pain and control and prevent

the spread of infection in an extremity until the patient is properly prepared for surgery.

4. When prepared by this method no patient is too hopeless for surgery.

5. In trauma and in acute arterial occlusions (embolic or thrombotic) the ice pack, without the use of a tourniquet, preserves the tissues of the extremity until the development of collateral circulation, which may make amputation unnecessary.

6. Refrigeration, with the tourniquet, is useful in minor surgery where no tissue is to be removed.

7. It is possible that cooling may lower the resistance of tissue so that infection occurs more frequently and spreads more rapidly after normal temperatures are restored.

8. Additional uses for this procedure may be found. They include the treatment of shock, of burns of the extremities, of insect and snake bites, and for the preservations of skin grafts.

9. It produces complete anesthesia when properly applied. Thus operation may be carried out without any shock to the patient, or interference with diet or the insulin requirements of diabetics.

10. Anesthesia is minor in importance when compared to the value of careful and thorough preparation of the patient, which this method affords.

The vasospastic occlusive arterial problems may be grouped together under the general heading of Raynaud's disease and Raynaud's phenomena. These problems vary from the minor annoyance of an occasional cold, numb digit to the severe pain and frequent attacks of a fully developed case of Raynaud's disease. The only surgical approach for these cases is the permanent interruption of the sympathetic fibers supplying the extremity or extremities involved. As might be expected, sympathectomy completely alleviates the discomfort in a great majority of cases.

Under the classification of exposure syndromes (pernio syndrome) are included freezing and frostbite, trench foot and immersion foot, erthrocyanosis, and any and all vascular pathologic processes due primarily to overexposure to cold. The early treatment consists of slowly thawing the extremity, bed rest, avoidance of trauma, keeping extremities cool, and repeated paravertebral blocks. In those cases exhibiting chronic postexposure symptoms, sympathectomy is the treatment of choice.[31]

THROMBOEMBOLIC DISEASE

It is only in recent years that the true concept of this pathologic entity has been realized. It is characterized by thrombus formation originating in the veins of the calf (phlebothrombosis) and by a process of direct extension of the thrombus gradually or suddenly, occluding the popliteal, femoral, or iliac veins and at times even invading the inferior vena cava (thrombophlebitis). At any time during this process, but much more frequently during the early, quiet state of phlebothrombosis, segments of thrombi may become detached and carried via the inferior vena cava and right heart as emboli to produce pulmonary embolic phenomena with infarction. This, all too frequently, represents the lethal termination of an otherwise well-managed surgical, obstetrical, or medical problem.[32]

The treatment of pulmonary embolism rests entirely in its prevention, which means the early recognition of thromboembolic disease. When recognized, either anticoagulation therapy or the surgical interruption of the continuity of the deep veins above the upper extent of the thrombotic process is imperative. The surgical procedure may be at the level of the superficial femoral, common femoral, external iliac, or common iliac veins. In the case of caval extension or bilateral iliac extension, ligation of the inferior vena cava is indicated.[33]

In the writer's experience the surgical approach to this problem has been more satisfactory, due to the extreme difficulty in controlling the proper and adequate amounts of anticoagulants which must be administered over a long period of time, if pulmonary embolism is to be avoided. In the writer's experience, the little postoperative edema encountered following ligations at these various levels has been readily controlled and eventually eliminated by adequate compression bandages to the extremities for from 3 to 6 months postoperatively.

In the chronic thrombophlebitic extremity (post milk-leg state) complicated with ulceration, the writer recommends superficial femoral ligation just below the profunda branch as originally recommended by Homans,[34] later by Buxton and Coller[35] and still later by Rees and Slevin.[36] Following this procedure, if adequate heavy compression is maintained, the great majority of chronic indolent stasis ulcerations will clear and remain healed without resorting to skin grafting, enucleation, or sympathectomies.

VARICOSE VEINS

So much has been written during the past 10 years concerning the combined ligation and injection method of treating varicosities and their complications, and so extensive has been the experience of vascular surgeons throughout the United States with the procedure that little more can be said on the subject. There is almost complete agreement in regard to the combined surgical and sclerotherapeutic approach. For a detailed discussion concerning the surgical management of this problem, the reader is referred to a recent paper by the author given before the California Osteopathic Association at Coronado, May 19, 1947.[37]

CONCLUSION

The reader is again reminded that practically all of the surgical procedures referred to in this paper have been developed during the past 10 years. The sum total of knowledge, in regard to the handling of vascular problems, is still in its infancy, although great advances are being made at the present time. One of the basic concepts of the osteopathic profession as advanced by Andrew Taylor Still was: "The rule of the artery is supreme." Those of us in the osteopathic profession who are interested in study, and the dissemination and exchange of personal knowledge and clinical experience, may well find that the osteopathic concept has valuable contribution to make in the field of vascular problems.

4309 Crenshaw Blvd.

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The Herniated Intervertebral Disk

An Evaluation of Surgical Indications and Results

TROY L. McHENRY, D.O., F.A.C.O.S.
Instructor in Orthopedics, College of Osteopathic Physicians and Surgeons
Los Angeles

INTRODUCTION

From the dawn of medical history, low-back pain and sciatica have remained a constant challenge to the healing arts. The many and varied therapeutic measures directed toward these complaints through the years indicate two very important facts: First, that all the etiologic factors have not been clearly understood and, second, that the symptoms may not necessarily arise from a single source, but quite probably from a combination of pathological processes involving what might well be designated the "vertebral complex."

In 1934 the work of Mixter and Barr[1] first brought forcefully to the attention of the healing professions the important part played by intervertebral disk lesions in the production of low-back pain and sciatica. Subsequent glowing reports of neurosurgeons recorded the dramatic relief of sciatica produced by the surgical extirpation of the herniated nucleus pulposus and the belief became general that therapy directed toward removal of space-occupying lesions was the panacea for low-back pain and sciatica and that an intriguing and annoying problem was now relatively solved.

During the last 15 years, the literature has been flooded by articles on the diagnosis and treatment of these lesions, and as is often the case with new and spectacular therapy, the reports during the first few years were enthusiastic and dogmatic. However, the original enthusiasm is now being tempered with some degree of caution and question.

The single procedure of excision of the herniated nucleus pulposus is now revealed to produce unsatisfactory end results in 20 to 30 per cent of cases and only partially satisfactory end results in another 10 to 15 per cent. Rehabilitation for physical labor following this type of surgery appears to be bypassed in the majority of published statistics; however, the indications are that about 40 per cent of patients are unable to return to occupations requiring much physical effort. These figures have stimulated enquiring minds to rediscover that the articular structures and their associated capsular elements, the periosteum, ligaments, and muscles, of the spine, are abundantly supplied with sensory nerve endings, and that pathologic conditions, trauma, stresses, and strains and perverted relationships of these structures can and do produce symptoms, either directly or reflexly, in the lower back and lower extremities. And so today the debates and discussions continue as to the efficacy of the surgical extirpation of the herniated nucleus pulposus as opposed to extirpation plus spinal arthrodesis.

This paper will be primarily directed toward cases requiring surgical therapy, stressing the evaluation of and the indications for surgical treatment; the technics directed thereto which are based primarily upon the writer's personal experience and study; the factors and procedures which must be taken into consideration during surgery; the errors and omissions which may and do occur; and the safeguards necessary to combat these errors and omissions. Thus an attempt is being made to overcome the large percentage of reported unsatisfactory end results.

THE EVALUATION

Credit must necessarily be accorded the neurosurgeons who first developed disk surgery; nevertheless the implications and dogmatic statements appearing in much of the neurosurgical literature indicating that lesions of the intervertebral disks are the agents in nearly all cases of low-back pain and sciatica should be unequivocally refuted. Such misleading information, particularly as it relates to low-back pain, limits

the thinking of the examining physician, thus decreasing the scope of examination and the study of the patient so necessary to bring into view the more obscure etiologic factors, so that the end result is an incomplete or incorrect diagnosis.

To evaluate properly the symptoms an understanding of the basic anatomy and the pathological perversions pertaining thereto is essential. The capsular elements of the spinal arthrodiae, periosteum, ligaments, and tendons are richly supplied with sensory nerve endings whereas the annulus fibrosus has been demonstrated to contain only a meager supply; therefore, its capacity to produce pain must necessarily be adjudged minimal as compared with the other structures. It should not be necessary to remind the members of our profession that pathologic conditions of the "vertebral complex" exclusive of the intervertebral disk can and do produce acute or chronic low-back pain and reflex lower extremity pains simulating sciatica.

The writer has noted that clinically patients with demonstrable herniated disk can be divided into two major classifications: First, those who have acute low-back symptoms associated with sciatica that does not complete the full dermatome pattern and who have no gross paresthesias or altered reflexes, and, second, those who have little, if any, back pain, relatively complete dermatome patterns, and associated paresthesias and altered reflexes. The former usually give a history of recurrent back episodes before the sciatica developed and the latter, one of inconsequential low-back involvement. Remembering the above symptoms at the time of surgical exposure, it was noted too frequently to be ignored that those cases with prominent back symptoms and no paresthesias presented lesser disk protrusions and that the associated nerve root appeared relatively normal in size and color and was freely retractable, whereas in those with predominant sciatica, paresthesias, and perverted reflexes the nerve root was swollen, inflamed, and frequently held rigid with adhesions.

These clinical findings stimulate analysis of the exact mechanism producing the symptoms. It would seem that acute sciatica with paresthesias associated with visible nerve root involvement at the time of surgery must be accorded directly to the space-occupying lesion, all other findings being negative. On the other hand it would be reasonable to assume that where there are acute back symptoms associated with sciatica but without paresthesias and presenting incomplete dermatome patterns and uninvolved nerve roots, the symptoms are predominantly reflex in character. Because of these clinical findings the writer is becoming more and more convinced that in a substantial percentage of patients the herniated disk is only one phase of a pathological state involving the entire "vertebral complex"—a result rather than a cause.

It is quite conceivable that there are some cases of primary intrinsic degeneration of an intervertebral disk, perhaps as a result of a local abnormal nutritional state. Nevertheless, because of the complex anatomy of the area, the frequent congenital anomalies, the upright human carriage inflicted upon a spine designed primarily for a quadruped, the resultant static strains produced, and the vulnerability of the area to repeated trauma, be it ever so minimal, produce an instability of the area which is transmitted to the intervertebral disk, eventually ending in degeneration and herniation. The surgeon who operates for the herniated disk without adequate study and evaluation, divorcing it from the entire "vertebral complex," should be subject to censure.

THE EXAMINATION

A minute and painstaking history of the complaint is essential. It should include the exact location of the symptoms and information as to which positions or activities aggravate and which relieve them. Examination should be made for spasm and "trigger" points and their reaction to procaine, which is an invaluable diagnostic aid to determine whether the symptoms arise from superficial muscular or fascial involvements or whether they arise from the deeper structures. For example, a sciatica which is relieved by procaine injection of the piriformis muscle certainly does not arise from a space-occupying lesion within the spinal canal.

A complete neurologic examination of the lower torso and lower extremities for study of tendon reflexes and perversions of sensory perception is essential. A thorough x-ray study of the lumbar spine is imperative and should in most instances include anteroposterior stereoroentgenographs; lateral exposures in both the recumbent and standing positions, which frequently reveal early spondylolisthesis and segmental instability; and right and left oblique exposures, which bring out pathological conditions of the arthrodiae, including defects which predispose to an unstable spine and which are not usually revealed in routine x-ray studies. If surgery is definitely contemplated a myelogram may reveal lesions at levels other than that originally suspected. I prefer pantopaque for myelography, probably because I am most familiar with its use and interpretation. Only when all the above has been completed and evaluated can adequate and correct surgery be designed.

SURGICAL PLANNING

Subsequent to the above mentioned examinations and diagnostic procedures, and provided conservative care has been utilized and found wanting, surgery may be contemplated and planned. Here it might be mentioned that, contrary to opinions expressed in much of old-school literature, the writer has found from clinical experience that osteopathic manipulative therapy has a definite place in the treatment of the more minimal lesions, particularly those which develop secondarily to perverted functional spinal relationships.

The first consideration should be directed toward the age of the patient and his or her anticipated postoperative life. An elderly frail sedentary female may not require and perhaps should not be subjected to any but the most simple of surgery designed to relieve acute symptoms, whereas a young husky male should be treated in such a manner as to offer rehabilitation for a long and active physical existence.

A surgeon should never fail to remember that the removal of a herniated intervertebral disk withdraws one of the supporting elements of the "vertebral complex" and must thereby weaken the area to a lesser or greater degree. The theory has been advanced that upon removal of the degenerated disk, pseudofibrocartilage or specialized scar tissue replaces this structure. In those few cases where the writer has had the opportunity to reoperate, the regeneration was not adequate to render satisfactory support. Also postoperative roentgenograms do not substantiate the replacement theory.

The loss of support is intensified to some degree by the surgical exposure itself. Even though little of the osseous structure is sacrificed it is necessary to resect the ligamentum flavum of the segment and side involved. The loss of ligamentous support on one side combined with some degree of ligamentous integrity on the opposite side not only creates a hypermobility of the area but produces tension strains upon the arthrodiae which have already been called upon to bear additional burdens. The otherwise architecturally and mechanically resilient normal spine may be able to compensate adequately, but a congenitally abnormal or mechanically deficient spine may "break down" as time passes. Many previous symptoms may recur and additional ones develop as the result of a facet syndrome, with associated reflex and referred pains. X-rays will reveal inflammatory hypercalcification of the articular structures although myelographic findings are negative.

In looking back over my experience with simple enucleation of the herniated nucleus pulposus I am prone to make the following observations: Those patients in whom the primary presenting symptoms were sciatica associated with paresthesias and perverted reflexes and who had no previous history of low-back pain, made the most consistently satisfactory postoperative recoveries, whereas those patients with previous histories of low-back pain and minimal disk lesions ended, surprisingly, with the least postoperative satisfaction. This I now attribute to the fact that the disk lesions were incidental or secondary to the primary pathology of an unstable spine which was not then recognized or adequately treated.

Predicated upon the previous discussions one may be justified in propounding the following principles: Those patients with demonstrable herniated intervertebral disks who have had no chronic lumbar symptoms, in whom the sciatica is associated with nerve pressure signs and in whom x-ray and physical findings demonstrate no other pathology will probably respond satisfactorily to simple surgical enucleation of the involved disk. The spine that is otherwise normal is able to compensate for its weakened area. On the other hand those patients in whom paresthesias and perverted reflexes are absent and who present chronic low-back symptoms and abnormal spinal architecture, should have, in addition to enucleation, stabilization of the area by arthrodesis. Since I have been following these principles, postoperative rehabilitation has been much more complete and postoperative lower extremity symptoms almost eliminated; thus the percentage of unsatisfactory end results has been materially reduced.

The basic technic of Albee and Hibbs for spinal fusion, the subsequent casting for many weeks, and the inactivity for many months with its morbidity and economic drawbacks, justifiably caused many patients to hesitate to submit to this additional surgery. However, the utilization of the fundamentals of a technic first described by King[2] has in the writer's opinion revolutionized spinal arthrodesis. It is an arthrodesis produced by transfixing the articular facets by metal screws, thus producing internal immobilization far superior to an externally applied cast; it eliminates the necessity of prolonged bed rest and postoperative casting, and permits the patient to be ambulant in 2 or 3 weeks in a simple brace. During the last 2 years I have been using a modification of this technic (to be described later) more or less routinely and have found that postoperative disability is very little more prolonged than that following simple disk enucleation.

I consider it justifiable to state here that in my experience the employees covered by workmen's compensation who develop herniation of an intervertebral disk as a result of industrial injury have, in the majority of cases, proved less amenable to rehabilitation following simple enucleation than those not covered by this plan. Consequently, I now recommend that arthrodesis be routinely performed in workmen covered by compensation benefits because I feel that the period of total disability will be only slightly greater than that following the more simple procedure and that the degree of permanent disability will be materially reduced or completely eliminated in the majority of cases.

THE SURGERY

All patients are hospitalized 48 hours preceding surgery for medical evaluation and operative preparation including skin sterilization. Only skilled anesthetists are used and the general anesthetic is chosen in consultation with the anesthetist. A combination frequently used is that of sodium pentothal and cyclopropane with paraspinal block or spinal and sodium pentothal. Intravenous solutions are administered continually during surgery and where a prolonged operating time is anticipated, blood transfusion during the procedure is routine.

The patient may be placed in either the prone or the lateral recumbent position for operation. The latter position is preferable in most cases because it creates less embarrassment to the respiratory mechanism and bleeding in the incision is drained away from rather than into the operative field. In addition the surgeon may be seated during surgery, which is much less tiring.

When partial laminectomy only is being performed, a longitudinal incision is utilized. For a combined laminectomy and arthrodesis a semilunar transverse incision is frequently employed since the one incision will expose both posterior iliac crests from which the graft material is removed. In the former procedure the muscles are dissected subperiostially and unilaterally from the spinous processes and lamina of the segments involved. When the area is to be stabilized the dissection is bilateral and extended laterally to expose the articular facets. The ligamenta flava are removed and usually the caudal third of the involved lamina. I have discarded the "no laminectomy" approach because it does not afford adequate exposure of the spinal canal for the exploration which is now considered essential. In my more recent experience I have demonstrated to my satisfaction that the usual area of herniation just lateral to the posterior longitudinal ligament may not be the only location of nuclear protrusion, and that secondary areas of herniation or nuclear migration may extend more laterally into the intervertebral foraminal spaces (intervertebral canal). These areas cannot be visualized or explored adequately through the "no laminectomy" approach. When only minimal protrusions of the annulus are revealed it is now my routine procedure to probe the intervertebral canals with soft rubber catheters in search of any protruding or obstructing masses. If any are found, further exposure is forthwith employed. I have been gratified on several occasions to find more nuclear material

located in the canals and on two occasions have encountered bony exostoses which were removed. The failure to explore these lateral areas adequately and locate secondary involvements is, I believe, another reason for much of the postoperative dissatisfaction.

During earlier experience with surgical removal of the herniated intervertebral disk I was not careful enough in curetting the disk space following the removal of the presenting portion of nuclear material; consequently on two occasions I was forced to perform subsequent surgery for further extrusion. I have likewise had the experience of reoperation in a few similar cases operated on by other surgeons. It is now my practice, in spite of the fact that it is not routine in some clinics, to curet the intervertebral disk space thoroughly and completely until I feel that all degenerated nuclear material has been removed. Further, if following this procedure I have not removed enough nuclear material to fill a small thimble, I am inclined to search for more.

At the time of preliminary exploration within the vertebral canal, if a visible bulging annulus is not noted, it must not be assumed without further investigation that a herniated disk is not present. The position of a patient at surgery may cause the disappearance of a disk that would be bulging quite prominently if the patient were in the erect posture. The annulus fibrosus should be palpated with blunt and semisharp instruments. If the disk is normal, the blunt instrument will meet firm solid resistance and the semisharp instrument will not penetrate, whereas the pathological disk will dimple obviously and easily under the pressure of the blunt instrument and will be easily penetrated by the semisharp instrument, and where the annulus is trephined the nuclear material will "cauliflower" through and be easily removable.

When surgical stabilization is to follow the laminectomy the capsular elements of the involved spinal arthrodiae are completely resected, the articular cartilage removed by chisel and curet, the facets transfixed by vitallium or stainless steel screws from ¾ to 1 inch in length, extending into the pedicles of the vertebra below. This procedure denervates the joints by the capsular resection and the screws produce rigid internal fixation far more effective than that accomplished by an externally applied cast. To reinforce the facet junction cancellous bone is removed from the crest of the ileum and packed around the denuded articular masses and across the scarified lamina to form eventually a solid bony bridge. Sometimes the external table of the crest of the ileum is fashioned into an H graft and placed between the undercut adjacent spinous processes before the facet screws are driven. The wound is closed in the routine manner and the patient is placed in bed without any additional support.

POSTOPERATIVE COURSE

After simple laminectomy the patient is gradually raised to full sitting position by the fifth or sixth postoperative day. The patient who has undergone arthrodesis remains flat in bed for 7 days but may turn as desired from the second postoperative day. From 2 to 3 weeks after operation the patient becomes ambulant with a simple brace or surgical corset. After either type of operation the patient is permitted to return to light sedentary occupation in about 8 weeks, but is not permitted to engage in any heavy physical occupation for 6 months.

GENERAL INFORMATION

I have had no mortality as the result of disk surgery with or without arthrodesis in more than 5 years. This I attribute to thorough preoperative preparation and the use of skilled anesthetists. There have been two postoperative complications. One is a case of peroneal paralysis in which, after 9 months, there is almost 75 per cent recovery; complete recovery is anticipated within another 3 months. The second is a case of complete motor (but not sensory) paralysis of flexion and extension of the ankle joint which is still present almost a year after operation. This case presents degeneration of response to electrical examination and the prognosis for complete recovery of function is poor, although at the last visit a very weak degree of definite flexion and extension of the ankle were elicited for the first time.

In neither of these cases was there any surgical accident of the nerve roots during the operative procedure but both cases presented massive herniated disk of two vertebral levels with rigid adhesions to the nerve roots. The handling and retraction of the roots and cauda equina necessary to permit the removal of the herniated masses constituted the only operative trauma.

SUMMARY

This paper has pointed out that general statistics reveal that the end results of surgical treatment of the herniated disk are relatively unsatisfactory in from 20 to 30 per cent of cases and only partially satisfactory in another 10 to 15 per cent.

On the basis of personal experience and study the writer has attempted to indicate the reasons for unsatisfactory end results. The most usual reason for poor results is that in many instances the herniated intervertebral disk is secondary to a mechanical defect in the integrity of the spine itself. The second reason for failure is that operative exploration is generally inadequate.

A plea is made for the study of the herniated disk as a part of the "vertebral complex" rather than as an isolated pathological entity.

If the examination, the evaluation, and the surgical procedures herein described are followed, the writer is convinced that the unsatisfactory end results of surgical treatment of herniated intervertebral disk can be substantially reduced.

766 S. Kingsley Drive

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DISCUSSION

J. M. Eaton, D.O., F.A.C.O.S., Philadelphia: Dr. McHenry has very ably presented the problem of the radiculosciatic syndrome attributed to the herniation of one or more of the lower lumbar intervertebral disks. In my opinion he has presented the most important phase of this entire problem, namely that degeneration and herniation of the lumbar intervertebral disk is a symptom or the result of the underlying cause which is the pathologic physiology of the lower lumbar region, where anomalies of development occur so frequently.

Basically, in the presence of abnormal structure, normal function cannot be expected. Abnormal function will result in trophovascular changes throughout the area, each structure being affected in its own peculiar anatomic pattern. We, as

osteopathic physicians, have no difficulty understanding this philosophy of disease as it is an integral part of the osteopathic concept of the etiology of disease.

Shortly after performing my first operations for the relief of this syndrome, being "structurally" minded and realizing that the surgical procedures then in vogue took no recognition of the basically weak lumbosacral region and that the operations in themselves took a further toll on the involved area, I came to the same conclusions as Dr. McHenry, and began to cast about for an efficient means of controlling the arthrodial syndrome which so frequently followed surgery and offset any beneficial effect the patient may have had from the relief of the nerve root irritation or compression. As far as the patients were concerned, the pain and disability were the same. Although it could be explained that the cause of their complaint was different they remained unconvinced, and who can blame them?

In 1944 King,[1] published his report. After studying the work I felt it might be the solution to the problem of so-called "disk surgery." It offered quick stabilization of the segments involved; reduction of the hospital stay to a minimum; fusion of the segments in flexion, thus preventing further collapse of the interspace and narrowing of the foramina; and, by the nature of the procedure, obliteration of the facet articulation, thus obviating an arthrodial syndrome.

Bone graft surgery has been disappointing, whether tibial or iliac grafts were employed, because of the prolonged postoperative bed rest and immobilization required, the economic factors encountered, and the fact that conventional bone graft surgery did not prevent collapse of the interspace and the development of an arthrodial syndrome, whether a pseudarthrosis developed or not.

I am now having the opportunity of observing 3-year postoperative results in those cases in which I employed facet arthrodesis with the internal fixation technic of King, following laminectomy for the removal of herniated intervertebral disks. I can concur with the opinion of Dr. McHenry that this technic has revolutionized spinal fusion surgery of the lumbar and lumbosacral regions. This technic has become an integral part of my therapy for the past year or so. In practically every case operated upon for the removal of herniation of one or more of the lower lumbar intervertebral disks and spondylolisthesis, stabilization has been accomplished in this manner, almost without postoperative incident. It has been my observation that the results of these operations thus far have been far more satisfactory than the results of those performed without facet arthrodesis.

The discussion of a paper in which oil myelography is advocated as a diagnostic procedure for the herniated disk syndrome, would be incomplete unless an advocate of air myelography mentioned that in determining the internal configuration of the lower spinal canal air has many advantages over oil as a contrast medium.

I wish to commend Dr. McHenry on his able presentation of this subject which has caught and held the immagination of the medical world since its clinical significance was presented by Mixter and Barr[2] in 1934.

12 South 12th St.

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An Analysis of the Indications for and the Methods of Uterine Suspension

C. WALLACE ROEHR, A.B., D.O.
Seattle

Historically, uterine suspension is a new addition to the field of surgery. It has been only a little more than a century since the first definite plan was advanced for correction of uterine malpositions. The first successful surgery was completed within the last three generations, within the life span of our most currently productive surgeons. In that short space of time the procedure has undergone a period of overpopularity, suffered a decline, and been re-evaluated.

It is gratifying to see the attention being given to the study of handling patients with uterine retrodisplacements and the effort being made for conservative treatment. Retrodisplacement without symptoms requires no treatment or, at the most, only conservative treatment. Among the more experienced such a course is generally followed. Among the less experienced a retrodisplacement is thought to be a surgical lesion, whether symptomatology referable to the lesion is present or absent. Often the symptoms presented are due to an associated condition, treatment of which would give relief. In other cases, the symptoms produced by the retrodisplacement may be alleviated by conservative treatment.

The etiology of the retrodisplacement must be considered in the selection of the method of management. The condition is seldom a single ill, as usually associated is a relaxation of the pelvic floor permitting descensus and consequent malposition or relaxation of the other supporting tissues. Louisa Burns,[1] in an excellent monograph, has given laboratory evidence that vertebral lesions of the upper lumbar segments causes a decrease in both tensile strength and recoverability of tissues supporting the pelvic structures. The lesioned animal will show malposition of the uterus, despite the postural advantage of quadripedal position, so how infinitely greater is the possibility of such pathology in the biped. This same conclusion has been reached by some of the best clinicians in the osteopathic profession, so the osteopathic surgeon has the added responsibility of consideration of this factor before surgical intervention.

Let us examine the conditions in which surgery may be considered to be essential. If the retrodisplacement is complicated by disease of the ovaries, uterine tubes, uterus, appendix, or adjacent tissues, uterine suspension is indicated as an adjunctive treatment after the complication has been corrected. If symptoms persist after conservative treatment, and if the symptoms can be definitely proved to be caused by the pelvic pathology rather than some general disease, surgery should be undertaken. In any case, the symptoms involved should be carefully considered in relation to the risk of the surgery, before any such action is taken. Consideration should also be given to all ramifications of the condition, such as the possibility of childbearing, of senile atrophy of the uterus causing decrease of symptoms, and even of future necessity for hysterectomy. In other words, there are very definite contraindications to the procedure, and these too must be kept in the foreground of thinking.

Having determined the necessity for surgery, the surgeon must then determine the type of operation

best suited for the particular case. There is no single best type of operation for suspension; the surgeon must have in his armamentarium many types to meet all the varying conditions encountered. Of the hundred or more kinds of operations that have been devised, a large portion may be eliminated at once. Three avenues of approach are available: through the inguinal canals, the vagina, and the abdomen.

Surgery accomplished through the inguinal canals, such as the Alexander operation and its modifications, is of historical interest only, and is now of value only because it was an early effort to make a correction along anatomical lines. This type of operation does not allow access to pelvic structures to correct other pathology, nor does it permit a more anterior implantation of the round ligaments.

The vaginal approach was used before the turn of the century in vaginofixation which has since been modified to be a vaginal elevation of the uteropubic fascia. The modification permits subsequent pregnancy, though the cases in which it is used (usually cystocele) frequently require a rather extensive colporrhaphy which may make delivery by cesarean section advisable. The surgery is directed toward the elevation of the uteropubic fascia on the anterior surface of the corpus uteri; the downward pull will then cause a forward thrust to the body of the uterus, turning the cervix posteriorly. It is essentially a change in the fulcrum in the principle of levers. There are modifications of the procedure that are occasionally helpful, such as the advancement of the bladder after opening the peritoneum, with or without plication of the round ligaments.

The abdominal approach is the most commonly used, and is the method that permits pelvic exploration for associated pathologies. The incision used may vary with the likes and dislikes of the surgeon, but must be central in location. The midline suprapubic incision is the one most commonly used and will probably continue to be such for some time in the future. If intestinal involvement is suspected, it permits enlargement more easily than the transverse abdominal incision. If anterior transplantation of the round ligaments is planned, the midline incision requires less mechanical adjustment than either the directly transverse or transverse gridiron incision. In my surgical service the transverse gridiron incision (Pfannenstiel) is used in most cases and gives very satisfactory results, as well as being markedly less painful postoperatively. If appendectomy is planned and a retrocecal appendix or a malrotation of the colon is encountered, difficulty of delivery of the appendix will tax the surgeon's ability.

Transplantation of the round ligaments to the anterior abdominal wall was apparently first devised successfully by Gilliam,[2] who published his work in 1900. The technic was to thrust a forcep through the aponeurosis, muscle, and peritoneum lateral to a midline incision and about 4 cm. above the pubis, grasp a temporary ligature around the round ligament about 4 cm. from the uterus, draw the loop of round ligament through, and suture it to the anterior surface of the aponeurosis. The procedure was bilateral. There are several important objections to a Gilliam suspension, the most important being that the directly transperitoneal transplantation of the round ligament causes a free band across the peritoneal cavity. Intestinal obstruction either by herniation of a loop of gut between the band and lateral abdominal wall, or by volvulus of a gut around the band, are potential sequelae to the surgery. Drawing the loop of ligament through the firm aponeurosis may cause strangulation of the loop and failure of the suspension on one or both sides. If a very large opening for passage of the ligament is made, ventral herniation may result. In the thin individual, the two loops lying on the aponeurosis just beneath the skin may be a source of discomfort and pain.

Crossen[3] modified the Gilliam operation so that the forcep remains extraperitoneal until the tip approaches the internal inguinal ring. Then the forcep is passed transperitoneally to grasp the round ligament or a temporary ligature in the round ligament approximately 4 cm. from the uterus. The round ligament is then withdrawn, passed through the rectus muscle, and the loop sutured to the aponeurosis on its internal aspect, rather than the external. This technic leaves no free bands across the peritoneal cavity, avoids passage through the aponeurosis, and leaves no annoying lumps beneath the skin. The suspension is anterior rather than lateral as was the case when the point of exit was the internal inguinal ring. The peritoneum mobilizes readily to the new more anterior exit.

In the Simpson-Montgomery technic[3] of subperitoneal transplantation a ligature is passed around the round ligament. Then through a small opening in the peritoneum, the ends of the ligature are threaded to a large pedicle needle which is passed through the broad ligament, along to the outer edge of the rectus muscle where it is passed through the aponeurosis. The round ligament is withdrawn along this track by means of the ligature and sutured to the external surface of the aponeurosis. Mayo modified the above technic by grasping the ligature about the round ligament with a forcep introduced from the outside instead of using the pedicle needle introduced from the outside. Also the forcep may be used to grasp the ligament itself rather than the ligature.

I have modified the last technic to suit my particular needs. The use of the transverse gridiron incision permits the passage of the forcep directly through the muscle. The tip remains extraperitoneal to the internal inguinal ring, then is passed medially through the canal of Nuck to grasp the round ligament about 4 cm. from the uterus. The ligament is withdrawn, and the procedure repeated on the opposite side. After peritoneal closure and approximation of the rectus muscles, the round ligaments are attached on the internal aspect of the aponeurosis. Some of the sutures that are used to close the aponeurosis are used to attach the round ligament to the aponeurosis and scar of the surgery. The greatest advantage of this technic is the more lateral approach to the internal inguinal rings, because the handle of the forcep that is used to grasp the round ligament may be rotated widely laterally in respect to the tip, and the tip can be directed more carefully subperitoneally at the internal inguinal ring. As Crossen[3] points out, the danger in the subperitoneal suspension is to the musculo-aponeurotic wall and the inferior epigastric artery and vein at this point. The relative ease of direction of the forcep by my method obviates in a measure such a complication.

In certain individuals a very lax abdominal wall is encountered, and the anterior transplantation of the round ligaments would be unavailing. Posterior im-

plantation of the round ligaments may be used in such instances, as in the Webster-Baldy operation. The round ligaments are drawn through small openings in the broad ligament beneath the utero-ovarian ligament and uterine tube, and are sutured to the posterior uterine wall and to each other. The openings in the broad ligament should be carefully repaired both anteriorally and posteriorally to prevent enlargement of the opening and possible herniation through the openings. McCall and Schumann[4] in 1946 published a modification of the Webster-Baldy operation, as a subperitoneal posterior implantation. The posterior parametrium is incised in the midline, and the forcep thrust subperitoneally laterally beneath the utero-ovarian ligament and uterine tube to grasp the round ligament and withdraw it through the tunnel so created. The procedure is repeated on the opposite side, then the loops are sutured together in the midline and the incision in the peritoneum closed over the ligaments. I have had occasion to use this method several times and find it useful. The objection to any posterior implantation of the round ligaments is that it makes use of the outer and weaker portion of the ligament for suspension. Posterior implantation should never be used when varicosities of the broad ligament are present.

In both anterior transplantation of the round ligaments and in posterior implantation of the round ligaments, the structure of the ligaments themselves must be adequate. Plication of the round ligament (Mann technic) or folding or reduplication of the ligament upon itself (Long technic) may be used in absence of adequate structures. Subperitoneal shortening of the round ligament may be used, by incision of the broad ligament in the long axis of the round ligament, mobilization of the round ligament, which is sectioned and overlapped upon itself, and the broad ligament incision closed in the direction opposite to the incision, shortening the broad ligament as well. In these operations suture of the uterosacral ligaments is added, to direct the cervix into the posterior portion of the vaginal vault. Suture of the round ligaments to the anterior abdominal wall (Neuhof) may be used, and is of value where tissue infiltration makes the shortening of the ligament, as required in the other procedures, inadvisable.

The previously discussed methods of suspension are compatible with future pregnancies. In the patient in whom pregnancy is not possible, ventrofixation as described by Kelly, Olshausen, and others may be permissible. With these technics the fundus of the uterus is attached to the abdominal wall about 5 cm. above the pubis; each operation shows some slight modification in technic. For ease of accomplishment this procedure is satisfactory; however, a frequent result is an opening between the uterus that is so fixed and the anterior abdominal wall, above the bladder, which is a point of potential herniation. Essentially, the operation offers a large measure of the disadvantages of the anterior transplantation of the round ligaments, and falls short in many of the good features.

Other types of suspension, and many other modifications of the ones presented, are too numerous for discussion in this paper. The essentials, however, fall into some of the above categories. A study of the patient will aid in the selection of the type of suspension to be used, and the surgeon should be equipped to use whichever is the indicated surgical procedure. It is almost inevitable that one method will be selected by each surgeon and will be found to be adequate for a large portion of his cases, the surgeon being conditioned for the use of that type. Anterior transplantation of the round ligaments is probably the most popular and useful development; its modifications assure greater safety to the patient.

SUMMARY

To recapitulate, then, the following points should be remembered:

1. Conservative treatment should be instituted as the therapy of choice in retrodisplacements of the uterus. Foremost among the factors that should receive attention is the vertebral lesion in the upper lumbar segments.

2. Surgery in indicated cases gives dramatic results in proportion to the surgical risk involved. Surgery should not be undertaken unless conditions make it mandatory.

3. Cases should be selected carefully. It must be emphasized that uterine suspension alone is inadequate for correction of cystocele, rectocele, or uterine descensus or prolapsus.

4. The more common methods of suspension were presented, with a short discussion of advantages and disadvantages.

906 East John St.

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ABDOMINAL SURGERY IN INFANCY AND CHILDHOOD

While at times almost every adult surgical condition may be found in an infant or a child, the converse does not hold true, as children suffer from several abdominal conditions such as acute mesenteric lymphadenitis, congenital pyloric stenosis, idiopathic intussusception, and certain malignant tumors, such as Wilms' tumor of the kidney, neuroblastoma of the adrenal or sympathetic nerve cells, which have no counterpart in adult life. The pathologic process in a child is often exactly the same as that found in adults but is modified by the child's reaction to it. It is for this reason that many diseases of infancy and childhood are abrupt in their onset, intense in their manifestations, and of short duration. Children do not suffer from the degenerative diseases of adult life, and their fresh young tissues react most satisfactorily to surgical trauma. Their powers of healing are tremendous and through the process of growth and development may overcome great handicaps. The best example of this power is the way that an infant will heal a postoperative incisional hernia by growth only, while these hernias in adults always need surgical repair.—Edward J. Donovan, M.D., *New York State Journal of Medicine,* February 15, 1949.

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Cancer of the Left Colon and Rectum

ARTHUR M. FLACK, JR., A.B.,D.O., F.A.C.O.S.
Associate Professor of Surgery
Philadelphia College of Osteopathy
Philadelphia

Cancer continues to be the leading surgical problem of this generation. Its management in the past few decades has revolved about the various applications of x-ray and radium therapy in combination with surgical excisions. Most, by far, of the cases of carcinoma require some form of surgical intervention for palliation or eradication, and this is especially the case in dealing with all malignancies of the gastrointestinal tract. Teropterin, alone or in combination with P 5, a polysaccharide subjected to five digestions, has been added to our armamentarium and is proving of advantage in the palliation and relief of symptoms in otherwise hopeless cases. By its use, life with comfort has been prolonged in many cases for months beyond the date fatal termination might have been expected. As yet, no cures have been reported with its use and it is not advocated as a primary attack on any malignancy.

It has recently rather forcefully been called to my attention that certain common usages of words by the American public have no place in the language. Misnomers from the start, they do more harm than good. One such word is "campaign." Military and presidential campaigns are of short duration, relatively, and end with victory or defeat rather abruptly. With such reasoning in mind, there can be no "campaign" against cancer. It demands a never ending struggle against ignorance and procrastination on the part of the public and those responsible for safeguarding its physical well-being. A recent issue of *Time* calls attention to the writings of Alfred Deutsch,[1] a columnist of the *New York Star*, who deprecates the shocking slogans that worthy health organizations use in their efforts to raise funds. The terror of the response created when the public is reminded that one out of eight dies of cancer, that one out of every three dies of cardiovascular disease, annoys him. He reminds us all that "when the whole grim truth is told, one out of every one of us dies. Period."

With this last statement there can be no argument, but our goal as people intensely interested in the prevention, control, and eradication of malignant tumors, should be to have everyone finally succumb to the degenerative processes of old age. In all humility we must assume, then, that each cancer fatality occurs because of neglect somewhere. This may be due to failure to teach the public to report for periodic examinations that can, if adequate, locate lesions before they produce symptoms, or to seek help sufficiently early once symptoms arise. Too often, however, it is due to failure of physicians to pay proper attention to the symptoms presented.

This week there was referred to me a 41 year old neurotic multipara whose last child was delivered 18 months ago and whose complaint was rectal bleeding beginning in December last and gradually increasing to a point where fatigue and exhaustion were added complaints. Five different physicians had been consulted and the patient had been told, without even the performance of a digital examination, that she was suffering with hemorrhoids. On this basis she was given suppositories with temporary relief or with some improvement in bleeding. Inspection and palpation revealed a 3 by 5 cm. mass at 5 o'clock on the posterior rectal wall within easy reach of the examining finger. Biopsy proved it to be adenocarcinoma. The patient is now hospitalized and being prepared for a Miles resection. The prognosis in this case easily could have been improved had a physician at the postpartum checkup confirmed his abdominovaginal findings by careful performance of rectoabdominal investigation, which would have disclosed this lesion before any symptoms were evidenced on the patient's part.

GENERAL CONSIDERATIONS

Generalizations made on the subject of cancer are applicable in consideration of carcinoma of the left colon and rectum. About 50 per cent of gastrointestinal malignancies are located in the stomach, with the large bowel taking second place with about 30 per cent. Statistics from the larger clinics of the country, although subject to slight variation, show a high degree of uniformity with regard to the location of colon cancer. Sixty to 75 per cent of these tumors lie within the range of inspection obtained with a standard 10-inch sigmoidoscope. Different observers report between 45 and 56 per cent as rectal, within reach of the palpating finger; between 9 and 17 per cent as rectosigmoidal, and between 12 and 22 per cent as sigmoidal. The remainder of the left colon is a relatively infrequent site for malignancy, with an occurrence of 4 per cent in the transverse colon, 2 per cent at the splenic flexure, and 4 per cent in the descending large bowel.

The etiology of cancer in the portion of the large bowel which develops embryonically from the hindgut is obscure, as it is in other locations. Although most lesions are discovered in the fifth, sixth, and seventh decades, they are not infrequently found in younger age groups. The recognition of this fact will encourage adequate investigation earlier in those individuals below 40 years of age and permit proper management sooner, with an increase in the survival rate. Most clinics report an incidence of about three to one for predominence of such tumors in males. Probably the one etiologic factor of greatest importance is the presence of polyps. This is the most common benign lesion of the large bowel and is inevitably one which produces no symptoms. Polyps may be sessile or pedunculated and frequently are so soft that identification by palpation, when within reach of the examining finger, may be impossible. All investigators report their tendency to undergo malignant change and they are to be considered as evidences of impending cancer if actual carcinoma is not found on histologic examination.

Within the past 2 years I have had two entirely asymptomatic patients in whom polyps were discovered during routine physical examinations. The first was a 38 year old nullipara upon whom I had performed a cholecystectomy and appendectomy. She reported for routine examination 1 year posoperatively, stating

that she had not felt better physically in the past 30 years. In the course of routine examination, specular observation of the lower rectum disclosed a small pedunculated polyp, 0.5 cm. in diameter about 1½ inches above the anal canal on the posterior rectal wall. It was removed by electrocoagulating snare, and tissue study showed malignant change in its surface without extension into the pedicle. No other polyps were located at this examination and sigmoidoscopy and barium enema study revealed no involvement of the upper large bowel. However, upon return for checkup within 3 months a second polyp was found, comparable in size and shape to the first, and located 5 inches above the anal canal on the right anterolateral wall. It likewise was removed and showed malignant change on its surface with no extension into its base. This patient has been examined at frequent intervals during the past 2 years, and no evidence of recurrence of polyposis or malignancy has been noted. She continues to feel well and I believe that in this case the desired results with a very early malignancy have been attained.

The second patient, seemingly in perfect physical condition, reported for a routine physical examination with the thought that she might have a hidden cancer as there was a history of malignancy in her family. Thorough examination revealed no abnormalities until proctoscopic examination disclosed two small polyps which were removed by electrosurgical snare. Sigmoidoscopy disclosed one or two small polyps higher up in the canal which were also removed. All showed early malignant change on the surface or a tendency in the direction of anaplasia. Barium enema study revealed no further polyposis or any other evidence of malignancy.

Among the other etiologic factors to be considered in the causation of cancer are the numerous pathologic states to which the large bowel and rectum are predisposed. Diverticulitis and diverticulosis are common conditions found at middle age that seem to have no relationship to the incidence of malignancy. Constipation, per se, constituting a chief complaint of the great American public, does not seem to have any direct bearing on the incidence of this disease. Chronic ulcerative colitis, although rather rare, may predispose to carcinoma in that the excessive granulation tissue which is produced in protracted exacerbations of this condition often result in polyposis which may become malignant. It is for this reason that every patient with this debilitating affliction should be frequently subjected to sigmoidoscopy and barium enema study of the double contrast variety to elicit the possibility of the presence of polyposis. When polyps are found, they should be excised electrosurgically and subjected to tissue study. Discovery of malignancy in the base of polyps or in the course of chronic ulcerative colitis demands the radical therapy that is given to carcinoma without these predecessors.

The symptoms of malignancy in the left colon may be few or absent. The average patient has had symptoms for about a year before he is seen by any physician. The most common symptom that the patient complains of is bleeding. In addition to this finding there may be insidious alteration in bowel habits, such as a gradually acquired constipation, foul flatus, diarrhea, pain, weight loss, change in size of the stools, and, finally, intestinal obstruction. Due to the location of the large bowel deep in the lateral peritoneal gutter, tumor is frequently not palpable until obstruction becomes a major complication. Bleeding that is so often experienced may be intermittent. Blood is usually lightly mixed with the surface of the stool and may be noted by the patient after defecation. In low-lying lesions below the rectosigmoid junction the bleeding frequently precedes the stool and may be rather explosive in its passage before the stool is pushed through the anal orifice. Often internal hemorrhoids accompany this condition. Casual examination may disclose only the hemorrhoids, for which injection or operative therapy is given without further examination.

CANCER OF THE LEFT TRANSVERSE AND DESCENDING COLON

In establishing a diagnosis of carcinoma of the left transverse and descending colon, it must be kept in mind that obstructive symptoms tend to predominate in lesions of this area. Growths in this location are most frequently annular in type. They produce a progressive stenosis of this portion of the bowel, where the fecal content is semisolid or hard instead of being liquid as in the right half of the colon, and thus rapidly tend to produce obstruction. Very often flatus is passed even though no fecal content can move beyond the point of the lesion. Obstructions are either acute or chronic. There is little warning before the development of acute obstructions which may be confused with small bowel obstructions. However, acute obstructions are less likely to take place than an insidious and slow or progressive type of blockage with increasing constipation. As the fecal column piles up proximally against the lesion, a tumor mass may be found which has shown no evidence of its presence prior to the occurrence of the increasing stenosis. But the chronic obstruction in left large bowel lesions often presents no symptoms except an obstinate constipation which does not respond to the use of cathartics or enemas. As the condition progresses without any evidence of pain, the abdomen tends to become moderately distended and the colon with its packed fecal content can then be discovered, frequently by the patient. Progressive dehydration occurs as time goes on and the patient's general physical condition becomes depleted. To localize properly this lesion in a patient who is not in a critical situation, a barium enema study utilizing a double contrast type of technic may be used if indicated.

In consideration of the prognosis in cases of carcinoma of the bowel, may I remind you that malignancy spreads by direct extension, by means of the blood stream, and through the lymphatic system. If the spread by direct extension is very great then the tumor is apt to be fixed to other structures. In the colon there is frequently an inflammatory reaction that binds the colon to adjacent tissue and that which on appearance seems to be inoperable may be merely an inflammatory reaction that mats adjacent tissues to the initial lesion. Metastasis by means of the blood stream occurs in about 10 to 15 per cent of the cases and accounts for liver involvement.

The lymphatic extension is primarily an embolic process from the original tumor into lymph nodes, from which there is no further spread of the disease until the nodes are overwhelmed completely. When this latter process occurs, further embolic spread is through collateral lymph channels, but the spread from one lymph node to another is not common. Retrograde metastasis to nodes below the lesion occurs only

when those nodes central to the tumor are completely replaced by carcinoma to block lymphatic drainage in this direction. The mesocolon of the left large bowel, sigmoid, and rectum contains a group of lymphatic nodes which number between 100 and 150. Because these are buried in the adipose tissue contained between the layers of the peritoneum, it is frequently impossible to palpate early involvement of the nodes, and for this reason, in the management of this condition, large resections are mandatory in an effort to cure the patient.

The question of liver metastasis demands some consideration. Benign lesions of the liver may give the appearance of malignancy. Brunschwig and Morton[2] state that it is frequently impossible to tell by inspection or palpation whether a solitary liver nodule is benign or malignant. The presence of one or several small subcapsular nodules in the liver with a resectable mass in the bowel should not argue against removal of the primary lesion. If there is doubt about the diagnosis, liver biopsy and frozen section may be done when the abdomen is open. In spite of the occurrence of malignant spread into the liver, a solitary nodule of the hepatic surface may represent a single embolic lesion, and its removal might result in cure for the patient in a situation which would otherwise make the advisability of radical surgery doubtful.

In the management of cancer of the left bowel there is some difference of opinion as to the procedure to be utilized. However, wide resection with end-to-end anastomosis seems to be most valuable. These operations may be either of the closed or open variety; the incidence of postoperative peritonitis has diminished with the better surgical care that has been utilized in recent years. The excellent prognosis, usual in cases of cecal carcinoma in which ileocolectomy is done, may be due to the large amount of mesentery that is resected. Exteriorization operations of the Bloch-Paul-Mikulicz type seem to be growing in disfavor because of the tendency toward incomplete removal of the associated mesocolon and the likelihood of producing spread into the abdominal wall adjacent to the colostomy site by soiling that area at the time of surgery.

The real question that exists in the management of any of these conditions, and especially in regard to end-to-end anastomosis, is "Can you remove all of the cancer?" and not "Can you sew the two ends together?" It is not uncommon to remove most of the transverse and descending colon, with end-to-end anastomosis to the upper portion of the sigmoid. It is known that severing the midcolic artery near its origin in cases where this is mandatory for mobilization, results in complete healing with good blood supply to such an end-to-end anastomosis.

One-stage operations are entirely supplanting multi-stage operations except in the presence of perforation and obstruction. In the management of these conditions the preoperative preparation is of most importance. Hospitalization for 5 or 10 days or more before surgery is frequently insisted upon. The bowels should be thoroughly emptied, utilizing castor oil, and intestinal antisepsis secured, or at least a decrease in the number of bacteria obtained by the administration of sulfasuxidine or sulfathaladine. A low residue diet containing from 120 to 140 grams of protein daily and adequate vitamins is given. Transfusions are utilized when any evidence of anemia exists. Proximal decompression is obtained with a transverse colostomy or ileostomy if any evidence of complete obstruction exists. Miller-Abbott intubation with decompression of the proximal bowel may be necessary if the patient shows evidence of acute obstruction, with the vomiting and dehydration that occur with this condition.

Optimum exposure in removal of these tumors must be insisted upon. Usually the long muscle-splitting rectus incisions on the left side are adequate to take care of these large bowel lesions. Transverse incisions in the upper abdomen may be used for lesions in the transverse colon. Generally the incision should be parallel to the long axis of the bowel to be resected. After the abdomen is opened, adequate mobilization of the bowel must be accomplished before resection is begun. If dissection is begun at the sigmoid level and carried up around the splenic flexure, the increased mobility makes the anastomosis easier. Usually, to adopt a rule that long segments of normal bowel above and below the lesion should be excised—a minimum of at least 3 inches on each side of the tumor—makes survival without recurrence surer for the patient. A free blood supply must be obtained at both ends to be anastomosed or else leakage will result. The color and pulsation of vessels that can be observed in these edges will be a good guide as to whether successful healing will take place. Sutures must not be utilized which put tissues on tension, because bowel will not heal if there is any pull on the suture line.

CANCER OF THE SIGMOID, RECTOSIGMOID, AND RECTUM

The diagnosis of malignancy in the sigmoid, rectosigmoid, and rectum is invariably a process that is extremely easy. A majority of these lesions lie within reach of the examining finger, and all of them in this location fall within the range of visualization by the sigmoidoscope. The barium enema may be utilized for confirmation of visual and palpatory findings and will help eliminate overlooking the existence of additional primary lesions higher up in the large bowel. We, as teachers, are probably failing to convince the average student and physician that sigmoidoscopy in the properly prepared patient is relatively easy, and for this reason most general practitioners either fail to employ sigmoidoscopy themselves or hesitate to recommend it to the patient. Biopsy of suspicious areas may be readily made with either biopsy forceps or electrocoagulating snares.

Since internal hemorrhoids, together with fissures, constitute the most common cause for rectal bleeding, the discovery of either of these two conditions tends to lull the physician who sees the patient first into a false sense of security and therefore no effort is made to seek out malignancy. We must amend our teachings to undergraduates and graduates alike so that they will be convinced that no examination is complete without sigmoidoscopy and barium enema study when any symptoms exist in the lower bowel.

The management of malignancy in these latter locations demands radical surgery as it does in lesions of the left colon. Numerous and varied operations have been devised for the surgical removal of cancer of the rectum and rectosigmoid. Efforts have been made repeatedly to preserve the sphincter mechanism, but as time goes on the trend is toward Miles' abdominoperineal resection as the only adequate procedure. It was my good fortune a little more than a year ago to hear an excellent paper on cancer of the rectum and rectosigmoid presented in Atlantic City by Fred

W. Rankin, M.D.[3] This comprehensive presentation was discussed by Thomas E. Jones, Leland S. McKittrick, and Frank Lahey. Unanimously they felt that the work of Miles constitutes the greatest contribution which has yet been made to surgery in this field. Surgical procedures for removal of rectal cancer have been devised by both Rankin and Lahey, but they have largely discarded them. They feel that the combined abdominoperineal operation as developed by Miles has not yet been excelled.

It is true that the combined abdominoperineal operation leaves the patient with colostomy, but these permanent abdominal stomas are not things to be dreaded as the average layman and, too often, the physician considers them to be. With adequate dietary management utilizing constipating foods, patients are not required to wear colostomy bags and many of them go through life without any alteration in their social or physical well-being. My patients are provided with the necessary instructions and told to acquire a webbed belt some 4 inches in width. A gauze pad is placed over the healed colostomy opening and held in place by the belt. There is no odor or leakage of fecal material. Patients are instructed to give themselves an enema every second or third day.

The problem of low anastomosis has been raised by Wangensteen[4] and others. Wangensteen feels that those lesions lying within 13 cm. of the anus must be considered low and essentially rectal and should be subjected to Miles' resection. Those more than 13 cm. above the anus may be considered rectosigmoid and high. In these cases he feels that conservative resection with preservation of the lower rectum by an end-to-end anastomosis is as effective as abdominoperineal resection. In low-lying lesions, conservative resection is not as good as the Miles operation because it does not deal effectively with the invisible lateral spread of the malignancy; thus efforts salvaging the sphincter may fail to result in cure. Probably the criterion upon which the decision should rest is the amount of lymphatic spread that is palpable when the abdomen is open. Should extensive nodal metastasis be palpable, the probability of retrograde involvement in lymph nodes beneath the peritoneal covering of Douglas' pouch exists, and the patient should be subjected to the more radical abdominoperineal operation.

In a presentation of this sort, the problem of inoperability demands consideration. What is the surgeon to do for the patient when tumors at the sites with which this paper is concerned, have obviously spread to distant locations making cure impossible by surgery or by any other means? Brunschwig has been a pioneer in subjecting these unfortunate patients to wide resections of involved tissue to palliate—successfully, in many instances—the suffering. The discomforts that ensue as the result of increasing bowel obstruction, of progressive anemia due to chronic blood loss, of dehydration, and of toxicity due to noxious metabolic products of the tumor entering the general circulatory system, demand more than recourse to stupefying narcotics to make the few remaining weeks bearable. Drastic, almost hopeless, procedures of wide dissection and removal entail long operations of 4 to 7 hours upon subjects depleted by changes in blood chemistry and count who are, at best, risks of poorer grade. Mortality rates are very high; many succumb during the surgery. However, the relief and improved health of the survivors, free of pain and distress during their remaining weeks or months of life, prove to the surgeon the value in these drastic procedures. After careful consideration, it is realized that the patient has everything to gain and usually nothing to lose. Radical palliative surgery has its place in the problem and a place that must become more prominent unless we are able to see every patient with carcinoma much earlier in the course of his disease.

CONCLUSIONS

1. The matter of cancer of the left colon and rectum is part of the general cancer problem which requires continual attack in an effort to reduce the mortality from disease in this location.

2. Routine physical examination for malignancy should include digital examination of the rectum and sigmoidoscopy, with recourse to barium enema study should any symptoms exist which indicate pathology higher in the lower large bowel.

3. Undergraduates and graduates must be taught that no patient should be treated for hemorrhoids until the possibilities of lesions producing bleeding higher in the bowel have been eliminated by sigmoidoscopy and barium enema study.

4. Adequate preoperative care of the patient is essential to diminish the mortality and morbidity of radical surgical procedures of the colon and rectum. Blood chemistry and fluid balance must be normalized and anemia corrected before subjecting the patient to operation.

5. End-to-end anastomosis of a closed or open variety should replace Mikulicz resections and should be preceded by transverse colostomy, cecostomy, or ileostomy in the obstructive case, to insure a more adequate cancer operation.

6. The Miles abdominoperineal resection in one or two stages is the ideal operation for the average patient with cancer of the rectum and rectosigmoid.

7. Low resections are of doubtful value if there is much evidence of lymph node invasion.

8. Radical palliative surgery should be utilized in cancer of the bowel even when metastasis exists for, although the mortality is high, everything is to be gained and nothing lost.

9. Obvious liver nodules may be due to causes other than the carcinoma or may constitute a solitary metastasis which if excised will allow cure.

135 South Seventeenth St.

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Treatment of Low-Back Pain with the Use of Caudal Anesthesia

W. E. CLOUSE, D.O.

Chicago

The purpose of this paper is to set forth some of the known principles of the treatment of acute low-back pain with the use of caudal anesthesia as an aid in the institutional approach to this problem. A brief review of etiology and pathology is in order so that this relatively new approach may be considered from the standpoint of selection of patients, routine diagnostic procedures, and therapeutic follow-up.

The etiological factors involved seem to be centered around the time-honored acute strain injury—lifting, pushing, etc.—superimposed on a poorly compensated lumbar or lumbosacral imbalance which may be due to various pathological entities. Facet tropism, short leg with lateral postural imbalance, congenital anomalies, and infectious processes producing bizarre abnormalities in the lumbar and lumbosacral regions, secondary minor strains, and external stimuli such as psychogenic factors, weather, improper sleeping habits, occupational strain, etc., can not be excluded in a discussion of this problem.

The pathological processes seem to be an affection of the interstitial tissue with secondary changes of muscle fibers. Chronic inflammation due to the typical repeated attacks of muscle spasm or foci of infection elsewhere usually constitutes the condition popularly referred to as fibrositis which is merely a low-grade edema with lymphocytic infiltration producing pressure on myoneural sensory endings and hence painful contraction and contracture.

This brings up the controversial point of the actual muscle groups responsible for low-back pain. The iliopsoas group of muscles seem to be the chief offenders in producing painful contracture of the low back. This is borne out by the clinical fact that the majority of patients with low-back pain present a picture of flexion posture attitude and listing with lateroflexion and rotation to one side or the other, associated with a history of pain which is most marked in the sitting posture and on attempts to rise from sitting or lying postures. Sherrington's[1] statement, "Reflex tonus is postural contraction," applies when there is a condition of psoas spasm with marked contraction of the antigravity muscles. This exaggerated postural contraction of the erector spinae group is responsible for the greater part of the lower lumbar and lumbosacral pain experienced with the original psoas spasm.

The selection of the patient is concerned with the etiology of the pain and the exclusion of contraindications for the use of caudal anesthesia. The necessary information can be obtained in a routine manner. It is based on an adequate history; complete physical examination; osteopathic and orthopedic examination which should include standing postural study, prone thigh extension, and search for specific areas of deep tenderness and muscle resistance, supine straight leg raising, and determination of complete range of motion of both hips to rule out hip joint disease; neurological examination of patellar and Achilles reflexes and sensory acuity of the lower extremities; x-ray studies with detailed anteroposterior and lateral examinations of the lumbar and lumbosacral area; and laboratory examinations which should include complete blood count, Kahn test, determination of sedimentation rate, and urinalysis. (Patients over 50 years of age should have blood nonprotein nitrogen and blood sugar determinations also.)

The typical patient chosen for this procedure presents the following clinical picture: The history reports attacks of low-back pain increasing in frequency and severity. Physical examination may or may not bring to light a distant focus of infection. Osteopathic and orthopedic examinations reveal an exaggerated postural imbalance with the patient listing to one side and forward with lumbar kyphosis. In the prone position leg raising is restricted on the side of the listing and deep lumbosacral tenderness is found on the opposite side. Deep tenderness and muscle resistance denote vertebral flexion with lateroflexion to the side of listing and rotation to the opposite side involving the twelfth dorsal and first and second lumbar vertebrae, and occasionally the third lumbar vertebra. Straight leg raising while supine usually reveals sciatic nerve irritation existing on the side opposite to the spinal lateroflexion. Neurological confirmation of true neuritis is usually absent. Laboratory examinations usually conform to the patient's general clinical condition, their importance being for the exclusion of pathological processes. X-rays show a decrease in the normal lumbar lordosis, but in the selected case do not reveal any lumbar or sacral anatomical anomalies or deformities. Thus we have a typical clinical picture of acute uncomplicated psoas myositis.

Immediately upon admission to the hospital the patient is placed on a fracture bed and prepared for bilateral Buck's extension for a variable period of time. Then, in a fasting state preceding the administration of the anesthetic, the patient is given 1½ grains of nembutal, 1/6 grain of morphine sulfate, and 1/150 grain of atropine sulfate. The administration of the single caudal injection is performed according to standard technic using a sufficient quantity of 1.5 per cent metycaine solution to reach the desired level, which has been found to be approximately 65 cc. I feel that the injection of the drug should be graduated, with an initial dose of 35 cc. including the test dose. Careful examination of blood pressure and level of anesthesia is necessary to obviate overdosages or undesirable effects.

The purpose of this type of caudal anesthetic is to produce iliopsoas and erector spinae muscle relaxation to the level of the origin of the psoas major muscle, or as high as the twelfth dorsal vertebra. The anesthesia relieves local pain and spasm but does not remove entirely the motor control of these muscle groups and lower extremities. This allows active osteopathic manipulative therapy of the lumbar area with practically full cooperation of the patient from the standpoint of relaxation and position and without pain.

The manipulative procedure is usually carried out 15 to 30 minutes following the injection of the anes-

thetic drug. This is the procedure as taught at the Chicago College of Osteopathy: The patient is placed on a table at the height preferred by the operator. With the assistance of a second operator the patient is placed on the side into which the upper lumbar and lower dorsal area has rotated. Obtaining a fixation point in flexion of the lower lumbar area and one in rotation to the same side as the lesion area of the upper extremity of the spine, the flexed thighs on the abdomen are rotated toward the ceiling by the operator while he controls the fixed point area at approximately the first and second lumbar with the upper extremity rotation control being held by the assistant. The thrust is one in rotation of the lower extremity, derotating the aforementioned lesion. The patient is then placed on the opposite side and this time the assistant controls the corrected lesioned area by rotating it to its side of correction and the lower lumbar segments, namely the third, fourth, and fifth, are rotated as a group into the direction of the upper lumbar group rotation with the fixed point between the second and third lumbar vertebrae. The amount of force used in the final thrust of correction is minimal as it would be possible to injure soft tissue structures about the facet joints if this force were not under complete control. The above completes the manipulative procedure under anesthesia. The patient is immediately placed into bilateral Buck's extension on the fracture bed with approximately 10 degrees flexion of the knees and slight elevation of the legs. The manipulative procedures described above are repeated within 24 hours and thereafter as often as necessary to maintain the correction originally produced.

The typical response to this procedure is usually one of loss of pain and muscle spasm within the first 24-hour period and return to normal activity within 48 to 72 hours following the original manipulative therapy. There is some pain as the caudal anesthesia wears off, which is usually controlled with ¼ to ½ grain of codeine by mouth. The patient's diet is controlled in an attempt to produce an alkaline ash to combat the marked tissue fluid acidity of the large muscle groups involved in constant contracture. Standing postural x-rays before discharge from the hospital and prescription of lift therapy in those cases in which a short leg is contributing to the etiology are necessary for future low-back comfort.

CONCLUSIONS

Determination of the etiological factors and an understanding of the pathological condition are all-important from the standpoint of administering caudal anesthesia and performing the osteopathic manipulative procedure outlined. The selection of patients is most vital in obtaining the best results. It is equally important to avoid selecting patients where the procedure is contraindicated, such as those with arthritis and bone disease and those in whom the anesthesia would be harmful. It is too early to make any dogmatic statements or to compile any effective statistics concerning the use of this procedure as an institutional adjunct to the treatment of low-back pain; however, the results obtained thus far are very encouraging.

ACKNOWLEDGEMENT

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5250 S. Ellis Ave.

REFERENCE

1. Sherrington, C. S.: Cited by Best, C. H., and Taylor, N. B., in The physiological basis of medical practice. Ed. 4. Williams & Wilkins Co., Baltimore, 1945, p. 823.

ADDITIONAL REFERENCE

Morris' Human anatomy, edited by J. Parsons Schaeffer. Ed. 10. The Blakiston Co., Philadelphia, 1942.

CRITICAL OBSERVATIONS OF THE RESULTS IN THE OPERATIVE TREATMENT OF SCOLIOSIS

William H. von Lackum, M.D., and J. P. Miller, M.D., writing in *The Journal of Bone and Joint Surgery* (American Volume), January, 1949, analyze some of the causes of substandard results in a series of more than 1,500 surgically treated cases of scoliosis, including 850 treated by the Risser hinge-jacket technic, and present the rationale of a somewhat modified form of treatment designed to overcome these deficiencies.

Most patients with untreated scoliosis attain an erect posture through adaptive bone growth, the head being centered perpendicularly over the sacrum and the shoulders and pelvis level; the few who are unable to attain this perfect balance have made progress in this direction. The development of scoliosis thus seems to be a protective reaction on the part of the growing spine endeavoring to maintain the erect posture in the presence of some unbalancing force or forces. This response is believed to be mediated through the constant action of the nerve tracts involved in the righting reflexes, accomplished through constant unilateral pressure on the growing bone in the spinal segments according to the laws of bone growth. All spines, therefore, scoliotic or straight, are functionally perpendicular to the ground. To appreciate fully the over-all balance of the individual patient, the spine must be analyzed as a whole.

In a full grown scoliotic spine a so-called single primary curve must be balanced by two reverse curves, one above and one below the primary curve; if the patient has attained perfect balance, the sum of the reverse curves must equal in degree the primary curve. In so-called double primary patterns, the two large curves balance each other; a high cervicothoracic curve is balanced by a lumbosacral curve. It must further be remembered that individual vertebrae involved in scoliosis have adapted themselves and their articulations to a deviated position and the position which they occupy is, for them, functionally normal.

From these facts it is evident that when correction of a single primary curve is undertaken it is a mistake to carry the correction beyond the ability of the compensatory curves to reverse themselves spontaneously. Tests have shown that in the average fully matured spine the upper and lower curves can reverse themselves to a total of about 20 degrees and most of this reversal is accomplished in the lower curve; hence if postoperative balance is to be maintained the primary curve in a mature spine can be corrected by only about 20 degrees. Correction greater than this must be accompanied with simultaneous correction and fusion of all curves in the spine, and the correction must be precalculated so that the sum of the reverse curves equals that of the primary curve in the corrected position.

The authors believe that most of the unsatisfactory results have been due to overcorrection of the primary curve. To facilitate proper correction of the primary and secondary curves, they have developed a "transection jacket" which can force three curves into alignment simultaneously. This jacket, after 4 years of use, has given good results in more than 100 cases.

Book Notices

THE SKIN DISEASES. A Manual for Practitioners and Students. By James Marshall, M.D., B.S., M.R.C.S., L.R.C.P., Consulting Dermatologist, Central Middlesex County Hospital; Director of Venereal Diseases Clinic, Royal Northern Hospital, London; lately Adviser in Venereology to the War Office, etc.; Membre de la Société Française de Dermatologie et de Syphiligraphie; Membre Correspondant de la Société Belge de Dermatologie et de Syphiligraphie. Cloth. Pp. 363, with illustrations. Price $7.50. The Macmillan Company, 60 Fifth Ave., New York, 1948.

This text is a manual for practitioners and students and as such is relatively brief. It gives rather comprehensive mention of the skin diseases, presented from the British approach. It is interesting to see that this British author quotes more from American than from British or continental sources.

The coverage of venereal diseases is the best presented of the material concerning skin disorders. It stresses the neglected type of patient which the average practitioner in this country seldom, if ever, sees. The complicated type of gummata and other extreme conditions are numerically well presented in photographs. The general printing of the book in black and white is considerably below usual American standards, and the color reproduction leaves much to be desired. The chapter on psychological aspects of skin disease is covered in approximately five pages mostly devoted to reciting several case histories. This brevity does not fit well with our American ideas.

The treatment suggested is rather brief, and unless one has some dermatological background it is rather hard to follow. The prescriptions are about the same as in most dermatology texts, but not as complete as those in the American military manuals. The antibiotics and their suggested schedules are up to date, as far as is possible for a book. We in America are somewhat spoiled by the completeness and thoroughness of our dermatological textbooks. If one invested in almost any of the standard American texts he would do as well, and probably better, concerning both diagnosis and treatment than with this manual.

A. P. Ulbrich, D.O.

DETAILED ATLAS OF THE HEAD AND NECK. By Raymond C. Truex, M.S., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, and Carl E. Kellner, Artist, Department of Anatomy, College of Physicians and Surgeons, Columbia University. Cloth. Pp. 162, with illustrations. Price $15.00. Oxford University Press, 2 West 17th St., New York, 1948.

The underlying principle in this presentation is that the aim in the study of gross anatomy is the mastery of topographical relations. In his professional work the practitioner will be dealing with local regions of the body and with specific relations of parts, and among the most important of these are the multitudes of structures of the head and neck. So much information has been accumulated concerning this region that mastery of it seems well-nigh impossible to the student who is faced with the task of acquiring a workable command of it and to the practitioner who must review the anatomy of the region. The organization of this atlas is designed to lessen the task for these two classes of users.

The drawings were made by Mr. Kellner directly from regional dissections done by Professor Truex. The same specimen was used for each series of dissections from superficial to deeper-lying layers. At each successive level the multiple relations of fascia, muscles, bones, vessels, and nerves are visualized; in addition to preserving continuity from plate to plate, this method permits a clear comprehension of the structures removed in the course of a dissection or traversed in a surgical procedure. This manner has been consistently followed through the neck, face, brain and spinal cord, orbit, ear, pharynx, mouth, larynx, nose, and paranasal sinuses. Enough of the axilla and thorax are shown to demonstrate the continuity of the structures of the neck into these regions. The final plates present a series of frontal and transverse sections through the most critical levels to correlate gross dissection with intact relations and to increase the appreciation of structural orientation and depth.

The book has been as carefully made as if it were a compilation of reproductions of masterpieces of art. The high quality coated paper permits faithful reproduction of the finest details, and the large size of the page eliminates the necessity for considerable reduction below life size of the structures.

PERIPHERAL VASCULAR DISEASES. By Saul S. Samuels, A.M., M.D., Consulting Vascular Surgeon, Long Beach Hospital, Long Beach, New York; Attending Vascular Surgeon, Brooklyn Hospital for the Aged; Chief of the Department of Peripheral Arterial Diseases, Stuyvesant Polyclinic Hospital, New York; Fellow in Surgery, New York Academy of Medicine; Member of Committee on Surgery, New York Diabetes Association. Ed. 2. Cloth. Pp. 85. Price $2.50. Oxford University Press, 114 Fifth Ave., New York 11, 1947.

Like the other volumes of the Oxford Medical Outline Series, this book presents its subject in syllabus form, with the inherent advantages and disadvantages of such a presentation. Among the advantages are the conciseness and precision of the discussions and the large amount of material that can be condensed into small compass; among the disadvantages are the absence of illustrative cases and the lack of much comment. These disadvantages are offset to some extent in this volume by the bibliographic references, enabling the interested reader to pursue the subject more widely. (In this connection, more bibliographic data in the references to periodical literature would be desirable; for instance, such a reference as J. A. M. A., 1939-39-86 is not much assistance since the volume numbers for that year are 112 and 113 and one can only guess that the 39 and 86 indicate page numbers in one of the volumes. Similar situations exist throughout the book. In a generally available publication, such a faulty reference does not make a great amount of difference; but with some of the other publications, which the reader would probably have to borrow from a distant library, considerable difficulty would be encountered in tracing the desired issue.)

Five chapters deal with fundamental concepts and background: anatomy of the blood vessels of the extremities and of the autonomic nervous system, classification of peripheral vascular diseases, symptomatology of peripheral arterial diseases, and objective signs of arterial occlusion. The rest of the book is devoted to individual diseases and abnormal conditions: arteriosclerosis obliterans, thrombo-angiitis obliterans, Raynaud's disease, erythromelalgia, acrocyanosis, embolism, cervical rib and scalenus anticus syndrome, axillary vein thrombosis, frost-bite, glomus tumor, aneurysm of peripheral vessels, varicose veins, thrombophlebitis, and diseases of the lymphatics of the extremities. Outstanding features of the book are the author's emphasis on conservative management, distrust of sympathectomy, emphasis on physical measures, and attention to dressings.

OCCUPATIONAL MEDICINE AND INDUSTRIAL HYGIENE. By Rutherford T. Johnstone, A.B., M.D., Consultant in Industrial Health; Lecturer at the University of California, Los Angeles; Formerly Assistant Professor of Medicine, University of Pittsburgh School of Medicine; Formerly Director of Department of Occupational Diseases, Golden State Hospital. Cloth. Pp. 604, with illustrations. Price $10.00. C. V. Mosby Company, 3207 Washington Blvd., St. Louis, 1948.

This is a difficult book to review. Most books on medical subjects can be subjected to a cool, detached, critical appraisal of their contents with little temptation to the reviewer to ramble away from his original purpose; but the vivid style of writing—at least the equal of that of well-known popularizers of science—and the fascinating subject matter tempt the reviewer of this book to forget that he is supposed to be sitting in judgment on it and to read on whither his fancy takes him. Only when he tries to sum up his impressions does he realize that this is also an important book.

The author has brought together a great mass of information about the workman in his industrial background and the

effects of elements of that background on the workman's condition which the physician must know if he is to treat the worker and which he would have great difficulty in learning for himself. He delineates clearly the functions of the industrial physician to the worker, to the industry, and to the state. As he specifically points out, industrial medicine is not compensation medicine, but the physician has an inescapable responsibility for the equitable administration of compensation laws and unless he knows the purposes of the compensation acts and can properly diagnose a possibly compensable condition he cannot adequately discharge that responsibility. Therefore Johnstone summarizes the compensation acts of the various states, and he makes the sweeping—but undeniably true—statement that the bulk of medical testimony given before the Industrial Accident Commission is conjectural. The remainder of the book is given over to information which will enable the medical witness to give expert, not conjectural, testimony in medicolegal controversies involving industrial problems.

Part Two deals with industrial solvents, the aliphatic and aromatic hydrocarbons, halogens and halogen compounds, the halogenated hydrocarbons, the oxides of nitrogen, and DDT and related substances. The organic chemistry necessary for an understanding of the systemic effects of these substances is reviewed, the clinical features of the diseases produced are described and illustrated by case reports, diagnostic procedures are outlined, and treatment is indicated. Part Three is devoted to the metals used industrially that involve health risks and Part Four to the dusts. A special chapter is given over to the synthetic products and the diseases for which they may be responsible. A particularly valuable portion of the book is the three chapters on industrial hygiene, written for the physician who has had no training in and no acquaintance with industrial processes; the advice is specific, and the chapters are carefully illustrated. A chapter is devoted to the pre-employment examination and the placement program. In an appendix is a list of the chemical constituents of common trade-name products.

NEW AND NONOFFICIAL REMEDIES OF 1948. Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on June 15, 1948. Issued Under the Direction and Supervision of the Council on Pharmacy and Chemistry of the American Medical Association. Cloth. Pp. 800, with illustrations. Price $3.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1948.

The 1948 edition of this compendium of information regarding therapeutic agents too new to be included in the official publications or for some other reason not suitable for inclusion closely resembles its predecessor, the first not printed on the American Medical Association presses. The latest volume, however, contains, in addition to a number of new entries, considerably fuller information concerning the regulations of the Council on Pharmacy and Chemistry of the American Medical Association governing acceptance of articles by the Council; although these regulations are of primary interest to pharmaceutical manufacturers, they contain much useful information for the physician who prescribes the drugs. Slight changes have been made in the organization of the book; as one example, the chapter in the 1947 edition entitled Choleretics has now become a section of the chapter on Gastrointestinal Drugs. The trend away from use of protected trade names, on which the publications of the American Medical Association have long insisted, has led to further elimination of proprietary terms from the index, making it harder than ever to obtain descriptions of accepted articles whose trade names differ considerably from the Council-accepted names. A few bunglesome names have been improved; the surprising "butylchlorate hydrate" of 1947 (perhaps that was a typographical error, since the term did not appear in the section on Tests and Standards) has been corrected to butylchloral hydrate in the present edition.

The book contains much information which would be difficult to obtain elsewhere and should therefore be a part of the working library of every physician who prescribes drugs and of every other person working with pharmaceuticals.

HYPNOTISM CAN HELP. By S. Irwin Shaw. Cloth. Pp. 213. David McKay Company, Washington Square, Philadelphia 6, 1948.

This is a popular but, on the whole, conservative discussion of some therapeutic uses of hypnosis. The author is a dentist who, as a boy, acquired an interest in hypnotism, devoted attention to it in his college career, and later, after he had begun professional practice, found that methods of suggestion were valuable in some phases of his work. He reports, rather in the style of the short story writer, some of his more interesting cases; he is as careful to cite cases of failure as he is to report successes, and his straightforward manner of telling the stories serves to de-emphasize the "magical" nature of hypnotism and to emphasize its practical worth in certain limited situations.

DISABILITY EVALUATION. By Earl D. McBride, B.S., M.D., F.A.C.S., Diplomate American Board Orthopedic Surgery; Assistant Professor in Orthopedic Surgery, University of Oklahoma School of Medicine; Attending Orthopedic Surgeon to St. Anthony's Hospital; Associate Orthopedic Surgeon to Wesley Hospital; Visiting Surgeon to W. J. Bryan School for Crippled Children; Chief of Staff to Bone and Joint Hospital, Oklahoma City, Okla. Ed. 4, revised. Cloth. Pp. 667, with illustrations. Price $12.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1948.

This book contains a great deal of information, much of it in the form of charts and tables, practically all of which is valuable, but, despite the author's statement in the preface to this edition that the text has been clarified and arranged for better comprehension, some of it seems needlessly complicated and obscure. In some instances the obscurity results from capricious use of punctuation—particulary, breaking up of connected thought groups by unnecessary commas and failure to insert both marks in paired punctuation; in others the obscurity is due to poorly constructed sentences—poorly chosen connectives, that do not make clear the exact idea that the author is attempting to portray; confusion of tenses; inconsistent organization of tabular material; and other faults of the not particularly skilled writer. (Literary excellence is not a requisite of a scientific treatise, but the language and style should be such that each sentence conveys the author's exact meaning on first reading.) Another weak point of the book is the woefully inadequate chapter on The Doctor as an Expert Witness. A physician would be the first to point out the inability of a lawyer to write on the medical aspects of medicolegal matters; why, then, should he not recognize that his own study of medicine does not make him an authority on the legal phases of such matters? The discussions of workmen's compensation laws are considerably better, and this part of the book contains much useful information.

This book has many points of excellence that more than offset the shortcomings already mentioned. Practically everything in the text leads up to the evaluation of the disability resulting from industrial injuries. The injuries themselves are discussed from various points of view: signs and symptoms, methods of examination, differential diagnosis, treatment, and prognosis. There is an excellent discussion of malingering and its detection and another on The Industrial Back. The illustrations are well reproduced and well selected.

GASTRITIS. By Rudolph Schindler, M.D., F.A.C.P., Clinical Professor of Internal Medicine (Gastroenterology), College of Medical Evangelists, Los Angeles, California; Senior Member of the Attending Staff, Los Angeles County Hospital; Consultant in Gastroenterology, Birmingham General Hospital, Veterans Administration, Van Nuys, California; Consultant in Gastroenterology, Cedars of Lebanon Hospital, Los Angeles, California. Cloth. Pp. 462, with illustrations. Price $10.00. Grune & Stratton, Inc., 381 Fourth Avenue, New York, 1947.

Gastritis has long been one of the most controversial subjects of medicine, and, consequently, any text that contributes in any way to settling any of the controversial points is of value. Although this book is by no means the definitive statement on gastritis, it is one of the best that has appeared. It is based on long clinical observation and study, and it has been carefully organized and written. There are two main divisions of subject matter: pathologic and clinical. In the

first, both the normal and the pathologic histology and the gross pathology of the stomach are described; in the second, there are discussions of the various types of gastritis: acute simple exogenous gastritis, acute corrosive gastritis, acute hematogenous gastritis, acute phlegmonous gastritis, chronic idiopathic gastritis, gastritis of the postoperative stomach, and gastritis in relation to concomitant diseases and sequelae. A chapter is devoted to gastritis in military medicine. The fifty-five illustrative cases are collected into one section and the plates and illustrations, which are excellent, into another. An extensive bibliography and a good index complete the volume.

The book should be of value to every physician—general practitioner, gastroenterologist, and internist—who may be called on to treat gastritis.

PEDIATRIC ANESTHESIA. By M. Digby Leigh, M.D., Director of Anesthesia, Vancouver, Canada; Diplomate of the American Board of Anesthesiology; Formerly Director of Anesthesia, Children's Memorial Hospital, Montreal, Canada; Formerly Assistant Professor of Anesthesia, McGill University, Montreal, Canada, and M. Kathleen Belton, M.D., Supervisor of Pediatric Anesthesia, Vancouver General Hospital, Vancouver, Canada; Formerly Assistant Director of Anesthesia, Children's Memorial Hospital, Montreal, Canada; Formerly Demonstrator in Anesthesia, McGill University, Montreal, Canada. Cloth. Pp. 240, with illustrations. Price $5.50. The Macmillan Company, 60 Fifth Ave., New York, 1948.

This admirably concise monograph is the result of collaboration of two recognized specialists in the field of pediatric anesthesia, and it fills a long-felt need for information on the special problems encountered in anesthetizing infants and children. Errors here produce far graver consequences than in older patients, but this fact is often ignored by the anesthetist or he is inexperienced in adapting procedures to the infant or child. The authors deal with the subjects of preoperative preparation; respiration and circulation; stages and planes of anesthesia; inhalation anesthesia; intubation; intravenous, rectal, and local anesthesia; choice of anesthetic agent and technic; complications during anesthesia; postoperative care; prophylaxis and therapy with oxygen; and fluid therapy. They give exact instructions on adaptation of dosage for young patients and describe the modifications of technic that must be made. Throughout the book they emphasize the special attention that must be paid to physiologic processes in the infant and young child.

This book should be a part of the working library of every person who is likely to have to anesthetize an infant or child.

HANDBOOK OF OPHTHALMOLOGY. By Everett L. Goar, A.B., M.D., F.A.C.S., Professor of Ophthalmology, Baylor University College of Medicine, Houston, Texas. Cloth. Pp. 166, with illustrations. Price $5.50. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis, 1948.

Believing that the books on ophthalmology available to the junior medical student contain too much material for an introductory course, Goar prepared a series of lectures for his students at Baylor University College of Medicine and issued them in loose-leaf form. These lectures form the basis for the present book. The author makes no claim for originality in anything but the selection of essential subjects that the student and general practitioner should know. The illustrations and much of the text material stem largely from Duke-Elder's "Text-Book of Ophthalmology," for which, or some equally comprehensive text, this handbook serves as an excellent introduction.

A METHOD OF ANATOMY, Descriptive and Deductive. By J. C. Boileau Grant, M.C., M.B., Ch.B., F.R.C.S. (Edin.), Professor of Anatomy in the University of Toronto. Ed. 4. Cloth. Pp. 852, with illustrations. Price $7.00. The Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore, 1948.

Although many parts of the fourth edition of this book have been rewritten and the entire text extensively revised, the excellent features of preceding editions have been retained. Chief among these is the regional approach. Most regions have a dominant feature—vessel, muscle, bony landmark, or viscus—around which the other structures of the region are built up; and the region is studied with regard to these central and secondary features. Function of parts is stressed, and structures cooperating to perform a task are studied together, with due regard to adaptation of the structures to the function. Distances to be measured are expressed in terms of related structures rather than in inches or centimeters. In the interest of simplicity, accuracy, and definiteness, the illustrations consist of line drawings, which, despite their apparent diagrammatic nature, are based on accurate measurements and minute observations on carefully dissected material; the present edition contains 800 such drawings. A better quality of paper has been used in this edition than was available when the preceding edition was printed, permitting clearcut reproduction of details of illustrations and easily read text matter. Much use has been made of contrasting type faces to emphasize relations of subjects and to facilitate use of the book for reference purposes.

This book is one which will be of great value to every student of anatomy, from the beginner in the field to the university professor.

A HANDBOOK FOR DISSECTORS. By J. C. Boileau Grant, Professor and Director of the Department of Anatomy, University of Toronto, and H. A. Cates, Professor of Anatomy, University of Toronto. Ed. 3. Cloth. Pp. 415, with illustrations. Price $3.00. The Williams & Wilkins Company, Mt. Royal and Guilford Aves., Baltimore, 1948.

This excellent handbook is the outgrowth of many years of teaching human anatomy. It was first used by the authors in mimeographed form and revised by them before it was submitted for publication; the first published edition thus represented the third edition of its mimeographed predecessor. The present volume is the second revision of the published version within 8 years, and in it are incorporated the changes which extended use has shown were desirable. The first edition was intended as a companion to the authors' "A Method of Anatomy" and contained specific references to that text, but in both later editions such references have been omitted. It is not, however, a textbook of anatomy, and the dissector is constantly referred to a textbook for further information; the references are to subjects rather than to a specific page in some textbook.

Throughout the entire book the emphasis is on economy of time and careful planning to eliminate wasted efforts and damage to the cadaver. The instructions are so specific that the student doing his first dissection will find what he needs in this book; the advanced student of anatomy can use the book as a guide in his work.

TREATMENT OF HEART DISEASE. By William A. Brams, M.S., M.D., Ph.D., Associate Professor of Medicine, Northwestern University Medical School, and Attending Physician, Michael Reese Hospital, Chicago. Cloth. Pp. 195, with illustrations. Price $3.50. W. B. Saunders Company, West Washington Square, Philadelphia, 1948.

From many years of clinical teaching, private practice, and consultation work, the author has come to the conclusion that there is need for a systematic and practical guide to the treatment of heart disease for the use of medical students and general practitioners, and he has attempted to provide such a guide, based on his personal experience. It seems that he has been successful in the attempt. The book is not a comprehensive treatise on heart disease; methods of treatment reported by other authors but not used by Brams are not discussed; and etiologic, symptomatic, and diagnostic considerations are omitted, since these subjects can be found adequately treated in standard textbooks. Since it is manifestly impossible in a book of this nature to give suggestions for all possible contingencies that will arise in actual practice, the emphasis is on fundamental principles of therapy, from which the practitioner can develop his own modifications to meet individual conditions. Brams considers that the fundamental need is for a clear knowledge of the pharmacologic action of the drugs used in treating heart disease; hence, he devotes the first, and longest, chapter to this subject. The drugs discussed are digitalis and its allies, mercurial diuretics, xanthines, quinidine, and hypnotics and sedatives; oxygen as

a therapeutic agent is also discussed. Because congestive failure develops in most patients with any form of heart disease, ability to deal with this condition is an essential prerequisite for successful treatment of heart disease, and Brams gives considerable space to this subject. Other subjects discussed are: diseases of the coronary arteries; treatment of disturbances in cardiac rate and rhythm; disturbances of conduction; infectious diseases of the heart and aorta; congenital malformations of the heart and great vessels; diseases of the pericardium; the heart in hypertension, in endocrine and metabolic disorders, and in vitamin deficiency; neurocirculatory asthenia; heart diseases in pregnancy; and surgery and heart disease.

The text is well-written; the few illustrations are carefully selected; and an extensive bibliography and very full index enhance the usefulness of the book.

DISEASES AFFECTING THE VULVA. By Elizabeth Hunt, B.A., M.D., Ch.B. (Liverp.), Honorary Consulting Dermatologist, South London Hospital for Women; Honorary Dermatologist, New Sussex Hospital for Women and Children, Brighton; Temporarily Honorary Dermatologist, Royal Infirmary, Liverpool; Formerly Senior Medical Officer, Radium Institute and Hospital for Skin and Cancer Diseases, Liverpool; Acting Honorary Dermatologist, Royal Sussex County Hospital, Brighton. Ed. 3, revised. Cloth. Pp. 211, with illustrations. Price $7.50. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis, 1948.

The first two editions of this book, a textbook on conditions affecting the vulva written by a dermatologist to meet the needs of general practitioners and gynecologists, met with considerable favor in this country, and it is expected that the new edition will be equally well received. Most of the changes concern therapy with drugs that have come into general use since publication of the second edition in 1943. Penicillin, the newer sulfonamides, and vitamins receive particular attention; some new uses for old preparations—apparently selected on an "eenie, meenie, minie, mo" basis in a few instances—are recommended, and additions are made to the discussions on vascular diseases and inflammations. The author still wisely omits instructions for treatment of syphilitic vulvar lesions.

GLOMERULAR NEPHRITIS: DIAGNOSIS AND TREATMENT. By Thomas Addis, M.D., F.R.C.P., (Edin.). Cloth. Pp. 338, with illustrations. Price $8.00. The Macmillan Company, 60 Fifth Ave., New York, 1948.

Addis has concluded from many years of experimentation and research that present day methods of treating patients with renal disease are inadequate and sometimes dangerous. Older methods of therapy were based explicitly on the principle of giving rest to the diseased kidney, but they were formulated at a time when nothing was known of the way in which the kidney works and, consequently, of how to give it rest. Later, as the errors in the older dietetic treatment became evident and evidence accumulated as to the harmful effects of protein deficiency, new methods of treatment were applied which place an unnecessary amount of work on the kidney, implicitly—if not explicitly—denying the principle of rest. The present book represents an attempt to restore the principle of rest to its proper place in treatment of patients in whom the disease has led to a substantial reduction in number of functioning nephrons. The principle cannot be applied, however, in an individual case until the physician knows the patient and has learned from direct clinical observation of his blood and urine all that he can of the nature and extent of the renal lesion.

Direct clinical observation presupposes methods so direct and simple that they can be applied by the office nurse and give results whose significance can be understood at a glance by the physician. Addis has compiled a collection of such methods and presents them here. They are clinical, not laboratory, methods which are intended to be included in the general physical examination and supplemented with laboratory studies if the results pose questions that necessitate further investigation for satisfactory answers. Included in this section are instructions to make it possible for patients to provide timed collections of urine, methods for qualitative and quantitative examinations of urinary sediment and for determination of rate of protein excretion in the urine, a clinical 5-minute hematocrit method, and methods for determinations of serum protein and creatinine concentrations. A chapter is devoted to special clinical dietetic methods. Some eighty pages are given over to inferences as to the nature and the extent of the renal lesion from the results of the clinical observations of the blood and urine. The rest of the book is devoted exclusively to glomerular nephritis: the theory and practice of its differentiation from other diseases; description of the clinical picture and course of the disease; and theory and practice of its management.

As the author himself says in the Introduction: "This, however, is not a textbook. It contains no compilation of methods used in the past in the treatment of glomerular nephritis, nor any detailed criticism of these methods beyond the implicit criticism that runs through the whole argument. We address ourselves to those who feel that in this matter we have not reached the textbook stage and that more investigation is what is needed now." Would that more authors would thus present their contributions as challenges to further research and re-evaluation of their findings!

THE DIGESTIVE TRACT IN ROENTGENOLOGY. By Jacob Buckstein, M.D., Assistant Professor of Clinical Medicine, Cornell University Medical College; Visiting Roentgenologist (Alimentary Tract Division), Bellevue Hospital, New York City; Attending Gastroenterologist, Beth David Hospital, New York City; Consultant in Gastro-enterology, Central Islip State Hospital, New York; Formerly Consultant in Gastro-enterology to the U. S. Public Health Service and the U. S. Veterans Bureau. Cloth. Pp. 889, with illustrations. Price $16.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1948.

From his more than 25 years' association with Bellevue Hospital, providing an unsurpassed opportunity to correlate roentgenographic findings with findings at operation or necropsy on patients with disorders of the digestive tract, Buckstein presents a comprehensive textbook on gastrointestinal roentgenography. Technical procedures are fully described, and functional and organic abnormalities are described and illustrated with reproductions of roentgenograms, photographs of surgical specimens, and case histories. In every section of the book normal findings are given for comparison with the abnormal.

The writing is good; the plan of organization and the illustrations are excellent. It is unfortunate that the foreign titles in the bibliographies are in need of proofreading by someone who knows how to use accents in French, can detect misspelled German words, and can read each language sufficiently to correct misplaced punctuation marks. This is a minor criticism, for the errors are not such that they will make it impossible for the user of the book to find the foreign literature referred to, but it seems a pity that such obvious blemishes should be allowed to mar such an excellent piece of work.

POLIO AND ITS PROBLEMS. By Roland H. Berg. Cloth. Pp. 174, with illustrations. Price $3.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1948.

"Here is the dramatic cavalcade of tireless research, perilous experiment, and stern persistence as science answers the challenge of poliomyelitis. Medical research becomes a living thing as Roland Berg weaves the triumphs and disappointments of research scientists into a vivid and absorbing tale." This introductory paragraph from the dust cover blurb is as good a review as this book needs. It is the sort of thing one expects in the color supplements of the Sunday newspapers, with its hysterical journalese style, the arty alliterations of some of the chapter headings (A Pill for Polio, Can Polio Be Prevented?) and the mawkishness of some of the others. Even the page numbers in the table of contents get confused at the halfway mark, and the chapters after the seventh do not begin where they are supposed to! This book bears about the same relation to poliomyelitis as Miss Rosalind Russell's movie of a few seasons ago did.

Make Hotel Reservations Now

for

Fifty-Third Annual Convention

of the

American Osteopathic Association

St. Louis—July 11-15, 1949

Hotel reservations for the Fifty-Third Annual Convention of the American Osteopathic Association in St. Louis, July 11-15, 1949, should be made through the A.O.A. Hotel Reservation Bureau, 1420 Syndicate Trust Building, St. Louis 1, Mo. (Turn over for Reservation Blank.)

It will be to your advantage to list three hotels in the order of preference, as suggested on the Reservation Blank.

Rates in each of the hotels are listed below:

NAME	SINGLES	DOUBLES	TWINS	SUITES
American	$2.75—$4.00	$3.50—$5.00	$4.00—$5.00	$ 8.00
Baltimore	2.75— 3.50	3.75— 4.50	4.00— 5.00	
Chase	3.50 & up	5.00 & up	6.00 & up	10.00 & up
Claridge	3.00— 4.00	4.00— 6.50	5.00— 6.50	10.00 & up
DeSoto	3.25— 5.75	5.00— 8.00	6.50—13.00	12.00—13.50
*Jefferson	4.50— 6.50	5.50— 7.50	7.00— 8.00	14.00—22.00
Lennox	3.75— 6.00	5.25— 8.00	6.50— 8.00	11.00 & up
Majestic	2.50— 3.50	4.00— 5.50	5.50— 6.00	
Mark Twain	3.50— 5.00	5.50— 7.00	7.50— 8.00	
Mayfair	3.50— 8.00	5.00— 8.00	7.00— 9.00	11.00 & up
Melbourne	4.00— 6.00	6.00— 8.00	7.00— 9.00	12.00—17.00
Park Plaza	5.00— 9.00	7.00—10.00	8.00—12.00	12.00—20.00
Sheraton	4.00— 6.00	6.00—10.00	7.35—11.00	9.00—30.00
*Statler	3.50— 6.50	5.25— 8.50	7.25—12.00	16.00—19.00

NOTE: Single rooms are extremely limited in number. You will stand a much better chance of securing accommodations if your request calls for rooms to be occupied by two or more persons.

*Official Headquarters for A.O.A. Convention

Important

Read Instructions Before Filling Out Application on Next Page

1. All reservations must be made through A.O.A. Hotel Reservation Bureau. Do not send reservations to the Local Arrangements Committee or the American Osteopathic Association Central Office.
2. All requests for reservations must give definite date and hour of arrival as well as definite date and approximate hour of departure. Names and addresses of all persons who will occupy the reservations requested *must* be included.

Classifications of Eligible Applicants for Hotel Accommodations

Member, Officer or Trustee, Delegate or Alternate, Scientific Exhibitor, Technical Exhibitor.

Application for Hotel Accommodations

AMERICAN OSTEOPATHIC ASSOCIATION CONVENTION

St. Louis—July 11-15, 1949

See preceding page for instructions and hotel prices.

A.O.A. Hotel Reservation Bureau
1420 Syndicate Trust Building
St. Louis 1, Mo.

Date.....

Please reserve the following accommodations for the American Osteopathic Association Convention in St. Louis, July 11-15, 1949.

Single Room.....Double Bedded Room.....Twin Bedded Room.....

2 Room Suite.....Other Type of Room.....

Rate: From $.....to $.....

First Choice Hotel.....

Second Choice Hotel.....

Third Choice Hotel.....

Arriving at Hotel (date).....hour.....A.M.....P.M. Leaving (date).....

hour.....A.M.....P.M.

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of both persons for each double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

.....

.....

.....

.....

(Individual Requesting Reservations)

Name .....

Address .....

City and State.....

Give name of firm if technical exhibitor

.....

If the hotels of your choice are unable to accept your reservation the Housing Bureau will make as good a reservation as possible elsewhere providing that all hotel rooms available have not already been taken.

ALL RESERVATIONS MUST BE RECEIVED PRIOR TO JUNE 20, 1949

Conventions and Meetings

Announcements

American Osteopathic Association, Fifty-Third Annual Meeting, St. Louis, July 11-15, inclusive. Program Chairman, K. R. M. Thompson, Chicago.

American Osteopathic Hospital Association, Detroit, October 10-13.

American Osteopathic Society of Proctology, Hotel Cleveland, Cleveland, April 11-13. Program Chairman, John Spencer, St. Joseph, Mo.

American College of Osteopathic Surgeons with Osteopathic Academy of Orthopedists, Statler Hotel, Detroit, October 9-13. Program Chairman, Karnig Tomajan, Boston.

Arizona, Santa Rita Hotel, Tucson, May 6-8. Program Chairman, Van H. Fossler, Tucson.

British Columbia: See Northwest Osteopathic Convention.

California, Hotel del Coronado, Coronado, April 28-30. Program Chairman, David H. Payne, Los Angeles.

Child Health Conference and Clinic, Municipal Auditorium Arena and Little Theatre, Kansas City, Mo., April 13-15. Program Chairman, J. Myron Auld, Jr., Kansas City.

Florida and Georgia, Princess Issena Hotel, Daytona Beach, June 6-7.

Georgia: See Florida.

Idaho: See Northwest Osteopathic Convention.

Illinois, Sheraton Hotel, Chicago, April 29-May 1. Program Chairman, Seaver A. Tarulis, Chicago.

Indiana, Oliver Hotel, South Bend, May 15-17.

Iowa, Hotel Fort Des Moines, Des Moines, May 16, 17.

Kansas, midyear meeting, Allis Hotel, Wichita, April 23-25; annual meeting, Topeka, October 1-5. Program Chairmen are Thomas O. Osborn, Colony, and Harvey H. Steffen, Wichita.

Kentucky, Brown Hotel, Louisville, October. Program Chairman, Martha E. Garnett, Louisville.

Maine, annual meeting, Belgrade Lakes, June 16-18; midyear meeting, Bangor, November 5, 6.

Michigan, Grand Rapids, October 30-November 3.

Minnesota, Breezy Point, June 3, 4.

Missouri, Hotel Continental, Kansas City, September 27-29.

New Jersey, annual meeting, Hotel Stacy-Trent, March 12, 13; midyear meeting, Trenton, September 10, 11.

New Mexico, LaFonda Hotel, Santa Fe, September 8-10.

New York, Hotel Arlington, Binghamton, October 14, 15. Program Chairman, Charles K. Smith, Elmira.

North Dakota, Minot, May. Program Chairman, George Lofthus, Bowbells.

Northwest Osteopathic Convention (Oregon, British Columbia, Washington, Idaho), Multnomah Hotel, Portland, Ore., June 13-15. Program Chairman, H. D. Groves, Portland, Ore.

Ohio, Deschler-Wallick Hotel, Columbus, May 23-25.

Oklahoma, Mayo Hotel, Tulsa, October 18-20. Program Chairman, E. C. Baird, Tulsa.

Oregon: See Northwest Osteopathic Convention.

Osteopathic Academy of Orthopedists: See American College of Osteopathic Surgeons.

Rhode Island, Sheraton-Biltmore Hotel, Providence, April 14. Program Chairman, G. S. McDaniel, Jr., East Greenwich.

South Dakota, Alonzo Ward Hotel, Aberdeen, June 5, 6.

Texas, San Antonio, April 28-30. Program Chairmen, Gordon Beckwith and H. H. Edwards, San Antonio.

Vermont, Randolph, October 5, 6. Program Chairman, Edward T. Newell, Rutland.

Virginia, Williamsburg Lodge, Williamsburg, May 20, 21. Program Chairman, Fred A. Gedney, Richmond.

Washington: See Northwest Osteopathic Convention.

West Virginia, Hotel Pritchard, Huntington, May 15-17. Program Chairman, Robert B. Thomas, Huntington.

Wisconsin, Wisconsin Hotel, Milwaukee, May 3-5.

Wyoming, Laramie, June 4, 5.

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OFFICIAL AND AFFILIATED ORGANIZATIONS

CALIFORNIA

Alameda County

Mr. Clarence Willard spoke on "The Art of Relaxation" at the meeting at Berkeley January 11.

"Surgical Pathology of the Female Pelvis" was the subject discussed by Robert P. Morhardt, South Pasadena, at the meeting January 23 at Berkeley.

Citrus Belt

Mr. Thomas C. Schumacher, Los Angeles, spoke on "Problems Now Pertinent to the Profession in California" at the meeting at Riverside December 9.

At the meeting at San Bernardino January 13, Basil Harris, Los Angeles, was to present "Diagnosis of Heart Conditions."

Los Angeles City

Robert Ruenitz, Los Angeles, was to speak on poliomyelitis, and William Neugebauer, Pasadena, on insurance problems at the meeting scheduled to be held January 10 at Los Angeles.

San Francisco

David B. Percival, San Rafael, discussed the general characteristics of headaches; Russell J. Tuche, Oakland, spoke on emotional headaches, and Mr. Stanley Smith of the C. B. Fleet Co. spoke on the chemical causes of migraine headaches at the meeting at San Francisco December 2.

San Gabriel Valley

A business meeting was held December 16 at San Marino.

Ventura

The moving pictures "Herniated Disk," "Second Lumbar Lesions," and a vacation travelogue were shown at the meeting December 9.

ARIZONA

Tucson

A movie on "Burns of the Hand" was shown at the meeting held January 5 at Tucson.

Maricopa County

Paul Bramnick, Phoenix, gave a speech on the gastrointestinal system at the meeting at Phoenix January 9.

ILLINOIS

District One (Chicago)

A meeting is scheduled to be held April 7 at Chicago.

INDIANA

State Society Auxiliary

The officers are: President, Mrs. Paul van B. Allen, Indianapolis; vice president, Mrs. Ernest Baker, Brazil; secretary-treasurer, Mrs. H. E. Eastman, Richmond.

The committee chairmen are: Program, Mrs. F. A. Turfler, Jr., South Bend; public relations, Mrs. J. E. Carter, Fort Wayne; legislative, Mrs. J. D. Hall, Kendallville; ways and means, Mrs. John M. Kauffman, Fort Wayne.

IOWA

District Six

The officers are: President, D. E. Sloan, Des Moines; vice president, E. S. Honsinger, Ames; secretary-treasurer, A. D. Craft, Osceola.

The trustees are: H. H. Kramer, Pella, and George K. Shimoda, Marshalltown.

KANSAS

State Society Auxiliary

The officers are: President, Mrs. C. A. Welker, Concordia; president-elect, Mrs. D. D. Harbaugh; vice president, Mrs. C. F. Bingesser, Waconda Springs; corresponding secretary, Mrs. F. H. Kendall, Holton; recording secretary, Mrs. J. W. Morrow, Greensburg; treasurer, Mrs. J. F. Duffy, Anthony.

The committee chairmen are: Membership, Mrs. Harbaugh; program, Mrs. Bingesser; printing and publicity, Mrs. C. A. Noble, Republic; hospitals and clinics, Mrs. J. B. Donley, Kingman; ways and means, Mrs. Harvey H. Steffen, Wichita; public relations and legislation, Mrs. K. J. Davis, Bethel; historian, Mrs. Frank E. Loos, Newton; nominations, Mrs. D. W. Hendrickson, Wichita; auditing, Mrs. T. K. Orton, Hoisington.

KENTUCKY

Western

C. H. Robertson, Owensboro, discussed "Cranial Concept and Technic in Relations to Infants and Children" at the meeting held December 12.

MASSACHUSETTS

State Society

The program announced in advance for the annual meeting held at Boston January 15, 16 included the following:

"Diagnosis of Arthritis," and "Treatment of Arthritis," E. C. Andrews, Ottawa, Ill.; "Physiology of the Cerebrospinal Fluid and Membranes of the Brain and Spinal Cord," "Physiology of the Liver and Kidneys," and "Physiology of the Spinal Segment as the Neural Basis of the Osteopathic Lesion," H. Ward Ferrill, Chicago; "Respiratory Technic of Still Lesions of the Cervical Spine," and "Respiratory Technic of Still Lesions of the Sacrum," Ward C. Bryant, Greenfield; "Superficial and Deep Fascia Anterior to the Spine," Edward B. Sullivan, Boston; "Osteopathy in Obstetrics," Alden Q. Abbott, Waltham; "Correct Posture," Charles W. Sauter, II., Gardner; "Still Lesions of the Liver, Abdomen and Pelvis," William T. Knowles, North Eastham; "Osteopathic Contribution to Cardiology," H. Earle Beasley, Boston; "Osteopathic Pediatrics," Nelson D. King, Boston; "Anatomical Technic of Still Lesions of the Sacrum," V. N. Hammersten, Newton Highlands.

The officers are: President, Richard A. Montague, Concord; vice president, Samuel B. Jones, Worcester; secretary, Robert R. Brown (re-elected), Belmont; treasurer, Amalia Sperl (re-elected), Haverhill.

Raymond W. Boyd, Lynn, is legislative chairman, and Mrs. Gladys M. Stockdale, Newtonville, has been reappointed executive secretary.

Boston

The officers are: President, Edward B. Sullivan; vice president, Stanley W. Kimball; secretary-treasurer, Frank M. Vaughan, all of Boston. All were re-elected.

K. George Tomajan, Boston, is trustee.

Connecticut Valley

Ira I. Chamberlain, Springfield, spoke on "Recent Advances in the Treatment of Ear, Nose and Throat Conditions" at the meeting at Holyoke, February 15.

Essex County

The officers are: President, Charles H. White, Lynn; vice president, Charles Donovan, Salem; secretary-treasurer, Raymond A. Boyd, Lynn.

Drs. Boyd and White are the trustees.

The committee chairmen are: Membership, Arthur Bunting; ethics, Herbert Hewson, both of Lynn; hospitals, Dr. Boyd; legislation, Dr. Donovan.

Middlesex South

The officers are: President, Donald S. Taylor, Belmont; secretary-treasurer, Winifred Miller (re-elected), Newton.

Alden Q. Abbott, Waltham, is trustee.

Mystic Valley

The officers are: President, R. Willard Hunt, Lexington; vice president, W. Hadley Hoyt, Jr., North Reading; secretary-treasurer, Ruth A. Baker (re-elected), Melrose.

Frank O. Berg, Malden, is trustee.

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By means of a single orally administered dose of penicillin taken as soon as possible after exposure, and preferably within 2 hours, the development of gonorrhea can usually be prevented. In a recently reported preliminary study,* the incidence of infection was dropped from 43 cases in 3,616 liberties among untreated controls to 2 cases in 1,239 liberties; there is reason to believe the two infections may have been due to failure to take the medication after exposure.

The subjects received a single buffered tablet of penicillin containing 250,000 units. No contraindications to this practice were detected. Ideally, the penicillin should be taken within two hours after exposure, but some protection is afforded even after an interval of six to eight hours.

Tablets Buffered Crystalline Penicillin G Potassium-C. S. C., individually wrapped in foil, are supplied in two potencies: 250,000 units each and 500,000 units each, in boxes of ten. Either may be employed, depending upon the clinical situation.

*Eagle, H.; Gude, A. V.; Beckman, G. E.; Mast, G.; Sapero, J. J., and Shindledecker, J. B.: Prevention of Gonorrhea with Penicillin Tablets. Preliminary Report, Pub. Health Rep. 63:1411 (Oct. 29) 1948.

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"Understanding the Neuropsychotic Patient" was the subject of a speech by Salvador Jacobs, M.D., of the Veterans' Hospital, Bedford, at the meeting held January 5 at Medford.

Norfolk County

The officers are: President, Earl C. Stevenson, Quincy; secretary-treasurer, Irving M. Parker, Mansfield. Both were re-elected.

Dr. Stevenson was re-elected trustee.

MICHIGAN

Capitol

The officers are: President, Robert G. Gardner; vice president, Hugh B. Beardslee; secretary-treasurer, G. Fenn Newark, all of Lansing.

Virgil C. Symmonds and E. A. Seelye, both of Lansing, are trustees.

Central

The officers are: President, C. B. Root (re-elected), Greenville; vice president, William Guinand (re-elected), Riverdale; secretary-treasurer, J. P. Engemann, Belding.

R. E. Benson, St. Johns; E. B. Binkert, Carson City, and A. C. German, Lyons, are trustees.

Eastern

The officers are: President, John J. Zuzga, Sebewaing; vice president, Lanson C. Cobb; secretary-treasurer, W. F. Scully, Jr., both of Marine City.

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The committee chairmen are: Membership, Harold Laidlaw, Bad Axe; ethics, Roy S. Young, Harbor Beach; hospitals, Art Shimmins, Sandusky; clinics, George A. Noble; statistics, John V. Wilkes; legislation, John Earnshaw; public health, William J. O'Connor; public relations, John R. Devereaux, all of Port Huron; convention program, Kenneth T. MacRae, Cass City; convention arrangements, Grey F. Lenzner, Bad Axe; vocational guidance, R. W. Campbell, Algonac; industrial and institutional service, D. M. Baird, Sr., Deckerville.

Kalamazoo

The officers are: President, Ernest L. Wheat, Allegan; president-elect, Milton J. Lucas, Kalamazoo; vice president, George R. Hoekzema, Colon; secretary-treasurer, Ralph W. Thomas, Plainwell.

Kenneth E. Marshall, R. A. Pryor, Curtis H. Bartlett, all of Kalamazoo, and Albert E. Van Vleck, Paw Paw, are trustees.

Kent County

The officers are: President, Arthur Taylor; vice president, Eugene Gasick; secretary, Robert Drews; treasurer, Joseph G. King, all of Grand Rapids.

Louis Monger, Roy G. Bubeck, Jr., and L. Verna Simons, all of Grand Rapids, are trustees.

Southeastern

Ira Rumney, Ann Arbor, showed films on peptic ulcers and films on the osteopathic lesion at the meeting at Salina January 22.

The officers are: President, Kenneth E. French, Monroe; vice president, Leland S. McCleery, Ann Arbor; secretary-treasurer, Truman Rentschler, Tecumseh.

Ralph F. Kraker, Ann Arbor; Clarence W. Reinhart, Monroe, and Frank T. Broadwater, Adrian, are trustees.

South Central

The officers are: President, Donald W. Brail (re-elected), Jackson; vice president, Jack W. Meehan, Battle Creek; secretary-treasurer, Raymond Staples, Jackson.

Southwestern

The officers are: President, Chester J. Zwissler; vice president, W. H. Stocker, both of Benton Harbor; secretary-treasurer, J. M. Brown, Berrien Springs.

Joe F. Reed, Watervliet; George G. O'Malley, Galien; Durward L. Dill, Niles, and Alton A. Hinks, Three Oaks, are trustees.

MISSOURI

State Society Auxiliary

The officers are: President, Mrs. L. T. Olson, St. Louis; first vice president, Mrs. J. R. Dougherty, Vandalia; second vice president, Mrs. B. M. Riles, St. Joseph; secretary-treasurer, Mrs. P. O. Baker, Centralia; corresponding secretary, Mrs. Wayne Maxwell, Savannah; parliamentarian, Mrs. John Hartsock, St. Joseph.

The committee chairmen are: Printing and publications, Mrs. Russell Glaser, St. Louis; revisions, Mrs. Hartsock; public relations, Mrs. E. Furey, Kansas City; legislation, Mrs. Robert Mitchell, Republic; student loan, Mrs. Howard Gross, Kirksville; scholarship, Mrs. Sam H. Leibov, St. Louis; Osteopathic Progress Fund, Mrs. L. R. Morgan, Joplin; ways and means, Mrs. A. F. Berkstresser, Eldon; hospitals and clinics, Mrs. H. N. Tospon, St. Joseph; historian, Mrs. Ernest Moore, Clayton; headquarters, Mrs. Leon B. Lake, Jefferson City; budget and program, Mrs. Riles; nominating, Mrs. W. L. Wetzel, Springfield; membership, Mrs. Dougherty; auditing, Mrs. R. M. Stevenson, Cape Girardeau; resolutions, Mrs. Gus Wetzel, Clinton.

St. Louis

Ellsworth B. Whitmer, Webster Groves, was to speak on association affairs at the meeting scheduled to be held at St. Louis January 18.

Southeast

The officers were reported in the November JOURNAL.

The committee chairmen are: Membership, C. W. Kinsey, Cape Girardeau; ethics, H. E. Reuber, Sikeston; hospitals, R. M. Stevenson, Cape Girardeau; clinics, L. M. Stanfield, Farmington; statistics, E. C. Masters, Advance; legislation, W. A. Rohlfing, Flat River; vocational guidance, Marguerite Fuller, Cape Girardeau; public health, M. P. Brogan, Benton; industrial and institutional service, A. H. Christiancy, Kenneth; public relations, P. A. McGuerty, Cape Girardeau.

NEW JERSEY

Hospital Association

The officers are: President, Herbert Laidman, Glen Rock; vice president, Melvin Elting, Teaneck; secretary, Walter M. Hamilton, Roselle Park; treasurer, Alfred Hoffman, East Orange.

Fannie Gardner, Spring Lake Heights; Frank Dealy, Sea Isle City; Charles Jones, Nutley; William Wilson, Ridgewood, and Gordon Peters, Cranford, are members of the executive committee.

Bergen-Passaic County

A discussion and demonstration of the management of the painful shoulder was given by Melvin Elting, Teaneck; Victor Drucker, M.D., Hurleyville, N. Y.; William Wilson, and Oswald B. Deiter, both of Ridgewood, at the meeting February 4 at Hackensack.

NEW YORK

State Society

The officers and directors were reported in the December JOURNAL.

The department heads are: National affairs, William S. Prescott, Syracuse; public health, David J. Bachrach, New York; professional affairs, John R. Pike, Albany; public affairs, William B. Strong, Brooklyn; state affairs, Merritt C. Vaughan, Rochester.

The committee chairmen are: Federal-state coordinator, Dr. Prescott; unit contact, Lawrence S. Robertson, New York; federal service, Samuel H. Scott, Albany; ethics, M. Lawrence Elwell, Rochester; Osteopathic Progress Fund, Lewis B. Spence, White Plains; insurance, Edith E. Dovesmith, Niagara Falls; vocational guidance, Clarence E. Long, Jr., Buffalo; education on public health, convention, and finance and budget, Dr. Vaughan; public relations, Wesley C. Luther, Hamburg; clinics and hospitals, Warren J. E. Tucker, Port Washington, L. I.; state medicine, Albert W. Bailey, Schenectady; workmen's compensation, Hewett W. Strever, Rochester; constitution and bylaws, Alvah H. Leeds, Yonkers; membership, and health and accident insurance, Robert E. Cole, Geneva; student loan fund, Edwin R. Larter, Niagara Falls.

The convention committee for the annual meeting in 1949 includes the following: Honorary chairman, Edward W. Cleveland; chairman, Lawrence J. Kellam; public relations, Lincoln A. Lewis; local arrangements, James S. Flannigan; secretary, J. Ward Donovan; professional publicity, Eugene J. Casey, all of Binghamton; exhibits, Carl Spear, Oneonta; program, Charles K. Smith, Ithaca; registration, Vincent L. Casey, Endicott; treasurer, Harold J. Leonard, Johnson City.

New York City

Alexander Levitt, Brooklyn, spoke at the meeting held at New York January 19.

John C. Button, Jr., Newark, N. J., was to speak on neurology at the meeting scheduled to be held February 16.

OHIO

State Society

The program announced in advance for the Refresher Course to be held at Columbus, February 16, 17, included the following: "Hypertension: Etiological Factors," "Hepatic Syndromes," "Recent Developments in Cancer Research," and "Observations on Osteopathic Therapeutics," Albert P. Kline, Ph.D.; "Hypertension: Course of Disease," "Hypertension: Anticoagulants in Therapy," "Modern Developments in Therapy in Viral and Rickettsial Diseases," and "Modern Approach to the Problem of Congestive Heart Failure," Frederick V. Hetzler; "Hypertension: Treatment," "Diagnosis and Classification of Viral and Rickettsial Diseases," "Chronic Amebiasis," "Common Problems in Pediatrics," and "Herpes," William C. Kelley; "Hormonal Mechanisms and Their Therapeutic Applications," Drs. Kline and Hetzler. All the speakers are of Kirksville, Mo.

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OREGON

Portland

H. W. Merrill, Tigard, spoke on "Osteopathy as a Profession" and Mr. Carl Ernst, supervisor of music for Portland public schools, demonstrated the therapeutic value of music at the meeting at Portland January 11.

Southern

Neurodermatoses were discussed by P. E. Thomas, Ashland, at the meeting at Ashland January 16.

Willamette Valley

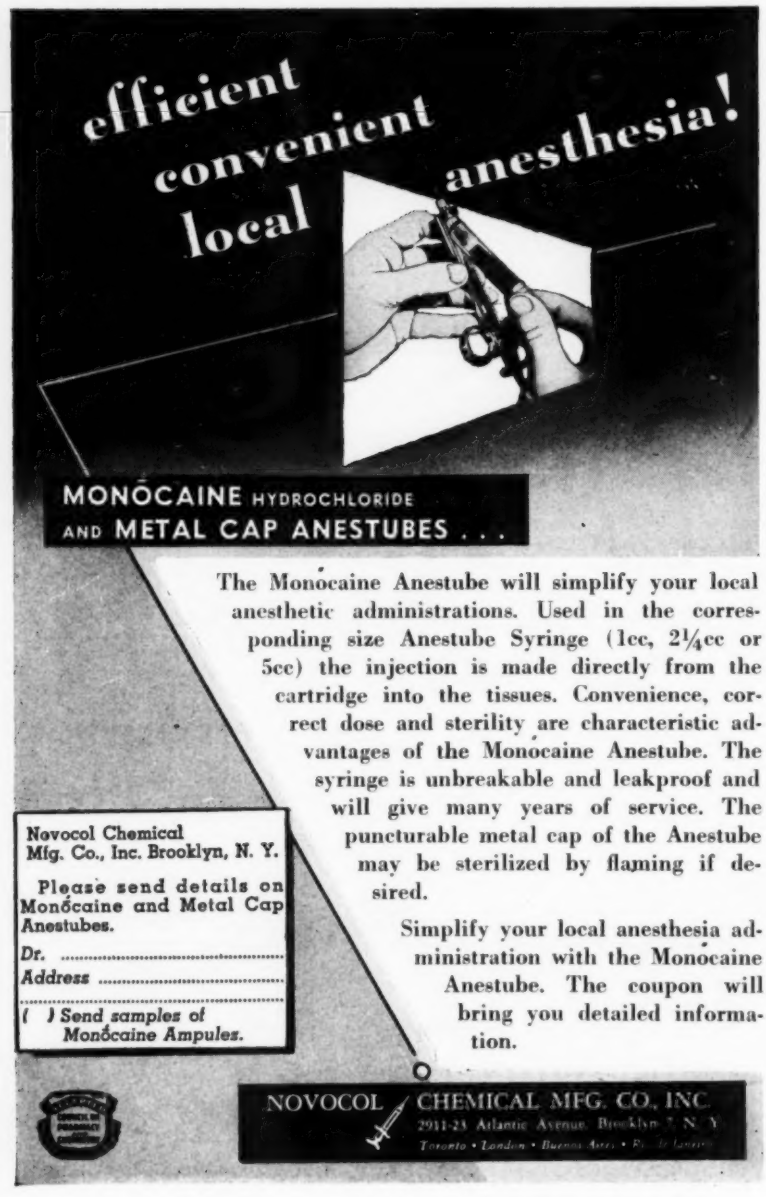
R. E. Walstrom, Eugene, spoke on "Body Mechanics" at the meeting at Albany January 15.

A meeting is scheduled to be held March 12 at Salem.

PENNSYLVANIA

State Society

The program announced in advance for the refresher course held February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26, 27 at Lancaster included the following: "Specific Manipulative Technics," "Visual Appreciation in Structural Diagnosis," "Anatomy of the Atlanto-Occipital Area," and "Physiology of Lesion Reduction of Atlanto-Occipital Area," Robert B. Thomas, Huntington, W. Va.; "Self-Supporting Feet," "Posture and Perverted Physiology," "Adjunctive Exercises in the Postural Case," "Progressive Osteopathy," "Appendicular Technic," and "Occupational Strain in Practice," Allan A. Eggleston, Montreal, Canada.

The officers were reported in the December JOURNAL.

The executive council includes the officers and the following district chairmen: First, Arthur M. Flack, Jr., Philadelphia; second, Leo C. Wagner, Lansdowne; third, Sterling Harvey, Easton; fourth, John L. McCorkle, North Mehoopany; fifth, Isadore Siegel, Lititz; sixth, Robert H. Abbott, Muncy; seventh, Ben L. Agresti, Erie; eighth, Rudolph A. Abraham, McKeesport.

Mr. G. S. Parnell, Indiana, is legal counsel.

The committee chairmen are: Legislation, J. McA. Ulrich, Steelton; clinics and hospitals, Galen S. Young, Chester; constitution and bylaws, Harold L. Miller, Harrisburg; ethics and censorship, George D. Kline, Tarentum; industrial relations and refresher course, F. E. Arble, Carrolltown; insurance, S. Donald Avery, Easton; membership, F. M. Purse, Philadelphia; college relations, Otto A. Meyn, Erie; publications, Raymond E. Dietz, Harrisburg; professional education, Roy E. Hughes, Indiana; public assistance, George B. Stineman, Harrisburg; public health, Reed Speer, Pittsburgh; public health education, William H. Behringer, Jr., Allentown; veterans, Clyde D. Saylor, Philadelphia; vocational guidance, George C. Wolf, Lancaster.

Hospital Association

The officers are: President, Ralph Cannon, Grove City; vice president, Walter Markley, Lancaster; secretary, Clara E. Canfield, Erie; treasurer, R. P. Chapman, Allentown.

District Two

The officers were reported in the December JOURNAL.

The committee chairmen are: Clinics and hospitals, Glen Cole, Norristown; programs, Galen S. Young, Chester; membership, Marie E. Baur, Jenkintown; vocational guidance, Olive L. Copp, Drexel Hill; ethics and censorship, Herman R. Kramm, Downington; insurance, Warren A. Pratt; veterans, Nicholas S. Nicholas, both of Upper Darby; industrial relations, Nelson H. Jones, Paoli; public health education, Herbert Fischer, Ardmore; public health; Marion E. Futer, Lansdowne; legislative, C. Earl Evans, Chester; Osteopathic Progress Fund, William A. Reynolds, Haverford; constitution and bylaws, Kermit H. Lyman, Upper Darby; building fund, Elisha T. Kirk, Media; publications, T. C. Satterthwaite, Ambler.

District Four

The officers were reported in the December JOURNAL.

The committee chairmen are: Clinics and hospitals and publications, D. Deane Maxwell, Carbondale; programs, Paul F. Wallat, Hawley; membership, Ada I. Hobbs, Scranton; vocational guidance and industrial relations, E. J. Thomas, Honesdale; ethics and censorship, John Colvin, Kingston; insurance, Margaret Evans, Scranton; veterans and public health, John J. Morris, Wilkes-Barre; public health education, Mable J. Gibbons, Scranton.

District Six

The officers were reported in the December JOURNAL.

The committee chairmen are: Clinics and hospitals, Lawrence W. Brown, Troy; programs, Dudley B. Turner, Williamsport; membership, H. Edward Davis, Lewisburg; vocational guidance, Dudley B. Turner, Jr., Williamsport; ethics and censorship, Leonard J. Neal, Mansfield; insurance, Robert L. Arble, State College; veterans, C. Howard Bowman, Williamsport; industrial relations, L. Elwood Slingerland, Canton; public health education, Alexander J. Lyons, Jersey Shore; public health, Clarence H. Couch, Troy; publications, Bertha M. Maxwell, Williamsport.

District Eight

The officers were reported in the December JOURNAL.

The committee chairmen are: Clinics and hospitals and vocational guidance, Reed Speer, Pittsburgh; programs and industrial relations, Frederick E. Arble, Carrolltown; membership, Ruth A. Franz; insurance, R. Gilbert Dorrance, Jr.; veterans, Howard G. McClelland; public health education, Charles F. Winton; publications, Raymond E. Wert, all of Pittsburgh; ethics and censorship, John E. Olsen, Rochester; public health, Richard N. Fithian, Somerset.

WASHINGTON
King County

J. Honnold and C. Mitchell, both of Seattle, spoke on "Diagnosis, Pathogenesis and Treatment of Rectal Diseases" at the meeting held January 4.

WISCONSIN
State Society

The program announced in advance for the annual meeting to be held May 3-5 at Milwaukee included the following: "Management of Labor," "Gynecological Conditions Resulting From Childbirth," and "Management of Pregnancy by D.O. Who Does Not Deliver the Baby," Homer R. Sprague, Lakewood, Ohio; "Orthopedic Problems of Low Back," "Manipulative Postoperative Management of Fractures," "Demonstration of Technic Following Cast Removal," and "Demonstration of Technic Following Low-Back Surgery," Donald Siehl, Columbus, Ohio; "Management of Eye, Ear, Nose and Throat Problems," "Role of the General Practitioner in Management of Eye, Ear, Nose and Throat Problems," "Complete Pre- and Postoperative Care in E.E.-N.T.," and teaching session on office procedures in E.E.N.T., C. M. Mayberry, East Liverpool, Ohio.

Fox River Valley

At the meeting at Oshkosh February 10, two speeches were given: "Respiration in Technic," by Catherine Clark, and "Osteopathic Neurology," by Guy E. Wiley, both of Oshkosh.

AUSTRALIA
Australian Osteopathic Association

The officers are: President, Elinor Keam, Melbourne, Victoria; vice president, Milton Conn, Brisbane, Queensland; secretary, D. C. McGown; treasurer, A. McGown, both of Melbourne, Victoria.

There are no committee chairmen in this association.

CANADA
Canadian Osteopathic Association

The officers and the Board of Directors were reported in the December JOURNAL.

Gordon L. Elliott, Toronto, is assistant secretary, and Mr. W. D. Sumner, C.A., Montreal, is auditor.

The executive committee are: J. E. Wilson, Barrie, Ontario; F. G. Marshall, Montreal; R. A. Linnen, Ottawa, Ontario; W. Kurth, Winnipeg, Manitoba; A. A. Eggleston, Montreal, and J. I. St. Clair Parsons, Ottawa, Ontario.

The department heads are: Professional affairs, F. H. Deeks, Winnipeg, Manitoba; public affairs, M. P. Thorpe, Vancouver, British Columbia; public relations, Dr. Parsons.

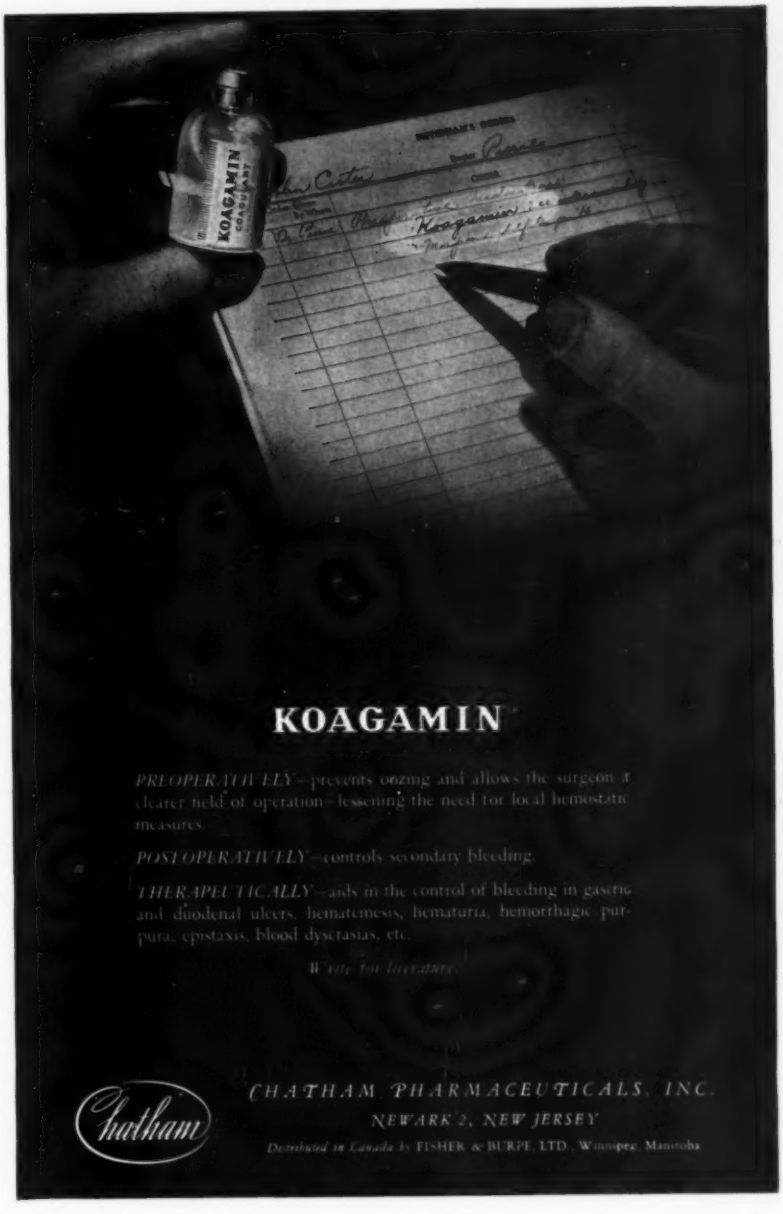
The committee chairmen are: Professional education, Joan McAllister; ethics and censorship, J. J. O'Connor; membership, D. G. A. Campbell, all of Toronto; professional opportunity, M. P. Christianson, Hamilton, Ontario; clinical study, D. E. Firth, Toronto; program material, R. B. Irvin, St. Catherines, Ontario; conventions, B. R. Marsales, Hamilton, Ontario; facilities and arrangements, C. V. Hinsperger, Windsor, Ontario; publicity, G. L. Elliott, Toronto; program, Dr. Marsales; agenda, Dr. Wilson; provincial affairs, H. B. Curry, Sault Ste. Marie, Ontario; health insurance, Dr. Linnen; vocational guidance, W. P. Currie, Montreal; rehabilitation, G. R. Church, Barrie, Ontario; public health, N. W. Routledge, Chatham, Ontario; endowments and gifts, E. S. Detwiler, London, Ontario.

Manitoba Osteopathic Association

The officers are: President, Edwin G. Bricker; vice president, R. M. Cornelius; secretary, L. B. Mason; treasurer, G. Glenn Murphy, all of Winnipeg. All were re-elected.

ENGLAND
British Osteopathic Association

The officers are: President, Philip A. Jackson, Oxford; first vice president, W. Cooper, London; second vice president, R. W. R. Watson, Newcastle-on-Tyne; secretary, S. S. Ball, London; treasurer, R. W. Puttick, London.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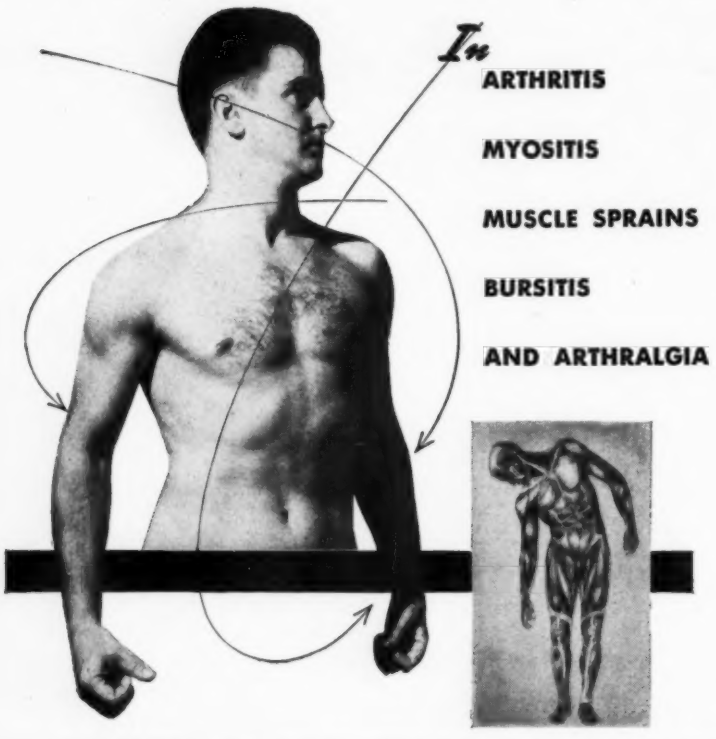

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SPECIAL AND SPECIALTY GROUPS

CALIFORNIA OSTEOPATHIC INDUSTRIAL PHYSICIANS AND SURGEONS

Randall J. Chapman, Burbank, spoke on "Peripheral Nerve Injuries and Repair" at the meeting January 13.

CENTRAL STATES OSTEOPATHIC SOCIETY OF PROCTOLOGY

The officers are: President, Worth M. Walrod, North Manchester, Ind.; vice president, George Hayman, Doylestown, Pa.; secretary-treasurer, E. R. Horton, Fort Wayne, Ind.

HOLLYWOOD OSTEOPATHIC LUNCHEON CLUB

The officers are: President, John F. Fahey; vice president, Bernice Harker; secretary, Clara L. Treat (re-elected); treasurer, Walter V. Goodfellow (re-elected), all of Hollywood.

ILLINOIS OSTEOPATHIC SOCIETY OF RADIOLOGY

At the meeting at Chicago, January 9, John H. Poehner, Detroit, spoke on "The Diagnosis of Diseases of the Upper Gastrointestinal Tract."

IOWA CRANIAL ASSOCIATION

L. A. Doyle, Osage, spoke on psychosomatic medicine; Alice Paulsen, LeMars, demonstrated technic and spoke on the diaphragm, treatment of the soft tissues of the chest wall, and tracheal relaxation, and Bert Adams, Ames, reviewed the effects of condylar compression on structures passing through the foramen magnum at the meeting at Fort Dodge in January.

MISSOURI OSTEOPATHIC SOCIETY OF RADIOLOGY

D. W. Hendrickson, Wichita, Kans., spoke on "The Clinical Aspects of Urologic Roentgenology" and "Roentgenological Considerations of the Upper Right Quadrant," at the meeting at Springfield January 30.

C. A. Tedrick, Denver, was to speak at the meeting scheduled to be held in St. Joseph, February 27.

OKLAHOMA OSTEOPATHIC RADIOLOGICAL SOCIETY

The officers are: President, A. G. Reed, Tulsa; vice president, Percy Roy Riemer, Pawnee; secretary-treasurer, G. E. M. Risberg, Chickasha.

OSTEOPATHIC ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY (CALIFORNIA)

Kenneth H. Edmiston, Alhambra, spoke on "Hearing Problems" at the meeting held January 24; H. George Blasdel, Los Angeles, spoke on "Strabismus" on February 21; and G. F. Quiros, Los Angeles, is to speak on "Maxillary Sinus Involvements" at the meeting to be held March 28. All meetings are held at Los Angeles.

OSTEOPATHIC ROENTGEN RAY SOCIETY OF OHIO

The officers are: President, John W. Keckler, Canton; vice president, Dwight A. Stiles, Dayton; secretary-treasurer, Raymond L. Wright, Toledo.

SOUTHEASTERN OSTEOPATHIC SOCIETY OF RADIOLOGY

The officers are: President, William Migden, Cocoa, Fla.; vice president, Robert Wilson, Daytona Beach, Fla.; secretary-treasurer, Evelyn Purtzer Lovejoy, Jacksonville, Fla.

Joseph R. Leary, Jr., Miami, is program chairman.

State and National Boards

ARIZONA

Basic science examinations June 21 at the University of Arizona, Tucson. Applications must be filed 2 weeks prior to examination. Address Francis A. Roy, secretary, Basic Science Board, University of Arizona, Tucson.

COLORADO

Examinations April 5. Address Walter W. King, M.D., secretary, State Board of Medical Examiners, 831 Republic Bldg., Denver 2.

CONNECTICUT

Basic science examinations June 11 at Yale University, New Haven. Applications must be filed 2 weeks prior to date of examination. Address Mr. M. G. Reynolds, executive assistant, State Board of Healing Arts, 250 Church St., New Haven 10.

DISTRICT OF COLUMBIA

Basic science examinations in April, professional examinations in May. Address George C. Ruhland, M.D., secretary, Commission on Licensure, Room 6150, East Municipal Bldg., 300 C. St., N.W., Washington, D.C.

FLORIDA

Basic science examinations June 11 at the University of Florida, Gainesville. Applications must be filed before May

30. Address M. W. Emmel, D.V.M., secretary, State Board of Examiners in the Basic Sciences, University of Florida, Gainesville.

Professional examinations June 26, 27 at Jacksonville. Applications must be filed 14 days prior to date of examination. Address Richard S. Berry, D.O., secretary, Board of Osteopathic Medical Examiners, 617-18 Times Bldg., St. Petersburg 5.

HAWAII

Examinations April 13. Address Mabel A. Runyan, D.O., secretary, Board of Osteopathic Examiners, 2333 C. Kalakaua Ave., Honolulu 30.

IDAHO

Examinations in June. Applications must be filed 15 days prior to date of examination. Address Estella S. Mulliner, director, Bureau of Occupational License, Dept. of Law Enforcement, Boise.

ILLINOIS

Examinations April 12-14 at Chicago. Address Mr. Fred W. Ruegg, Supt. of Registration, Illinois Department of Registration and Education, State House, Springfield.

IOWA

Basic science examinations April 12. Applications may be filed up to date of examination. Address Ben H. Peterson, Ph.D., secretary, Board of Basic Science Examiners, Coe College, Cedar Rapids.

KANSAS

Examinations June 16-18 at Topeka. Applications must be filed 30 days prior to date of examination. Address Forrest H. Kendall, D.O., secretary, State Board of Osteopathic Examination and Registration, 420½ Penn, Holton.

MAINE

Examinations in June at the State House, Augusta. Address Albert E. Chittenden, D.O., secretary, Board of Osteopathic Examination and Registration, 50 Goff St., Auburn.

MARYLAND

Examinations in June. Address Walter H. Waugaman, D.O., secretary, State Board of Osteopathic Examiners, 33 S. Centre St., Cumberland.

MICHIGAN

Basic science examinations May 13, 14 at Ann Arbor and Detroit. Applications should be filed before May 1. Address Miss Eloise LeBeau, secretary, State Board of Examiners in the Basic Sciences, 101 Walnut St., Lansing.

MINNESOTA

Basic science examinations April 5, 6 at Minneapolis. Address Raymond Bieter, M.D., secretary, State Board of Examiners in the Basic Sciences, 126 Millard Hall, University of Minnesota, Minneapolis 14.

MISSOURI

Examinations in June at Kansas City and Kirksville Colleges. Address F. C. Hopkins, D.O., secretary, State Board of Osteopathic Registration and Examination, 203 S. 6th St., Hannibal.

MONTANA

Clem L. Shafer, Helena, has been reappointed to the Board of Osteopathic Examiners.

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NEBRASKA

Basic science examinations May 3-4. Applications must be filed 15 days prior to date of examination. Address Mr. Oscar F. Humble, director, Bureau of Examining Boards, State House, Lincoln.

NEW MEXICO

Basic science examinations May 1. Address Miss Marguerite Kilkenny, Assistant Secretary of State, Secretary of State's Office, Santa Fe.

OREGON

Examinations in June. Applications must be filed 15 days prior to date of examination. Address Mr. Howard I. Bobbett, executive secretary, 608 Failing Bldg., Portland.

RHODE ISLAND

Basic science examinations May 11. Applications must be filed by May 1. Professional examinations April 7. Address Mr. Thomas B. Casey, Administrator of Professional Regulation, 366 State Office Bldg., Providence.

SOUTH CAROLINA

Examinations in June. Address M. V. Huggins, D.O., secretary, State Board of Osteopathic Examiners, 208 Carolina Life Bldg., Columbia 56.

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SOUTH DAKOTA

Basic science examinations in June. Address Gregg M. Evans, Ph.D., secretary, Basic Science Board, Yankton College, Yankton.

TEXAS

Examinations June 16-18 at Austin. Applications should be filed by June 6. Address M. H. Crabb, M.D., secretary, State Board of Medical Examiners, Medical Arts Bldg., Fort Worth.

WISCONSIN

Basic science examinations at the Loraine Hotel, Madison, April 2. Applications must be filed before March 26. Address Professor W. H. Barber, secretary, Board of Examiners in the Basic Sciences, Ripon College, Ripon.

WYOMING

Examinations June 6, 7 at State Capitol, Cheyenne. Address G. M. Anderson, M.D., secretary, State Board of Medical Examiners, State Capitol, Cheyenne.

ALBERTA

Examinations in April. Address G. B. Taylor, acting registrar, Office of the Registrar, Edmonton.

ONTARIO

Examinations in June at Toronto. Address George A. DeJardine, D.O., secretary, Board of Regents; Drugless Practitioners Act, 12 King St., E., Toronto.

EXAMINATIONS BY NATIONAL BOARD

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary, and the completed application blank together with a passport photograph and check for the part or parts to be taken, must be in the Secretary's office by the November 15, or April 15, preceding examination. Part III of the examination will be given in specified locations at the discretion of the Board for the convenience of the applicant.

Examinations in Part I consist of anatomy, physiology, pathology, chemistry, and bacteriology. Part II consists of examination in mental diseases, surgery, obstetrics and gynecology, pediatrics, public health, osteopathic theory and practice. Part III is an oral examination.

Address John E. Rogers, D.O., secretary, 16 Mount Vernon Street, Oshkosh, Wisconsin.

RE-REGISTRATION OF OSTEOPATHIC LICENSES

March 31—Georgia; no registration fee, professional tax, $15.00. Address Arthur W. Hasty, D.O., secretary, Board of Osteopathic Examiners, 104-06 Park Bldg., Griffin.

April 1—Wyoming, $2.50. Address G. M. Anderson, M.D., secretary, State Board of Medical Examiners, State Capitol, Cheyenne.

April 15—Montana, $2.00 for residents; $1.00 for non-residents. Address Asa Willard, D.O., secretary, Board of Osteopathic Examiners, Wilma Bldg., Missoula.

May 1—Iowa, $1.00. Address Mr. Dwight S. James, assistant secretary, Board of Osteopathic Examiners, 200 Walnut Bldg., Des Moines 9.

May 1—Washington, $2.00. Address Mr. George C. Starlund, acting director, State Department of Licenses, Olympia.

A CENTENNIAL OF PUBLIC HEALTH*

Louis I. Dublin, Ph.D., F.A.P.H.A.

Second Vice-President and Statistician Metropolitan Life Insurance Company, New York, N. Y.

(Continued from Feb. JOURNAL, ad p. 48)

Another way to gauge what has been accomplished is to compare the average length of life or the expectation of life at birth at the beginning and at the end of this memorable century. In 1850, the expectation of life of a male at birth was 38.3 years in Massachusetts; in 1940, the expectation was 63.3 years. For white females, the figure in 1850 was 40.5; in 1940, it was 67.6 years. Because there has been some added improvement in the course of the last dec-

*Presented before the American Public Health Association at the Seventy-sixth Annual Meeting in Boston, Mass., November 9, 1948. Reprinted by permission from the *American Journal of Public Health*, December, 1948.

ade, we can safely say that between 1848 and 1948 there has been a gain of more than 25 years in the average length of life for males and of about 28 years for females. This improvement has, of course, been largely concentrated at the younger ages because the diseases which have been most reduced had their chief incidence in infancy and childhood. But we must not minimize the gains in early and middle adult life.

As a result of these gains, millions of people have been saved from premature death. The duration of the working period of life has been greatly extended, making possible increased production and a higher standard of living for all. Huge numbers have been enabled to reach the older ages, having enjoyed a full life freed, for the most part, from the heavy impact of the diseases which plagued the population a hundred years ago. These advances have kept families intact and have, in fact, produced a very different atmosphere in which the average family can live. Widowhood and orphanhood, which produced enormous demands on our charities and welfare services, have been greatly reduced. Social service workers no longer need concentrate their energies on patching up the maladjustments that result from the premature death of a breadwinner but can now use their skills on positive programs to help people enjoy a rich and full life. It is not an exaggeration to claim that the current prosperity and leadership of the United States in world affairs flow in good part from the achievements of the last century in the field of medicine and its auxiliary health services.

The public health movement on its centenary is a full-grown development, not only in our country but throughout the civilized world. Here we have at last developed a large corps of well trained professionals who in their various specialties render an effective public service. In the states, we now have organized health departments manned, for the most part, with efficient, skilled personnel. Our larger municipalities and county jurisdictions are increasingly being served in this way. Not less important has been the growth of our federal health department. In spite of the limitations of our administrative system, it has served exceedingly well in stimulating the state and local official health agencies, in arousing public interest, in demonstrating the feasibility of certain health operations, and through public grants, has made local health services increasingly effective. In its ever-growing scope and function, the Service has demonstrated and justified the theory of governmental responsibility for the health of the people.

Supplementing the ever-expanding operations of the official health departments are those of the voluntary health agencies. This has been a singularly American contribution. Nowhere else in the world have these nonofficial agencies developed to such an extent or in such variety. Beginning early in the century, they have grown to include something like 20,000 separate organizations operating on the national, state and local levels and are concerned with virtually every phase of the public health program. Their function has been, on the whole, to pioneer in demonstrating the activities necessary to attack one or another of the public health problems. In this connection, I am proud to mention the constructive role of the life insurance companies.

One of them has over a 40 year period developed a well rounded health program for its many policy holders. In cooperation with the National Tuberculosis Association, it helped to demonstrate how a community could bring tuberculosis under control. Other insurance companies have aided in the control of accidents. The philanthropic Foundations have played an important part in financing the training of health officers, in medical research, and in improving health administration. The voluntary health agencies often goaded the official departments to greater effort. Primarily, they have served to educate the American people with respect to public health and to make them aware of the services offered by the health departments.

In pausing to take stock of the public health movement at the close of a century, we may also venture an opinion on the future course of the program. We have still a long way to go before we have implemented and utilized our public health and medical knowledge to the full. The next decade or two will, I am sure, see an increasing development

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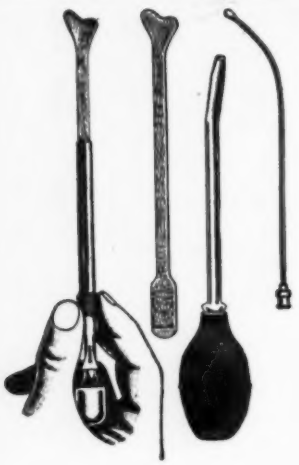

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of official health service to cover every major unit of our population. The trend is clearly in the direction of making available to every community full-time, trained public health servants, more adequately supported to do essential health work. This, together with the advances being made in the organization of medical care, in the extension of our hospital facilities, and in the health education of the people, should result in such material achievements as the virtual eradication of tuberculosis and in further reducing the incidence of the infections.

Other areas of the public health, heretofore neglected, will certainly receive more concentrated attention in the future. The gains in longevity of which we are so proud have greatly increased the numbers of older persons in the population and have given greater emphasis to the diseases of middle life and old age, such as heart disease, arteriosclerosis, cancer, and arthritis. We have been prone to consider these conditions the inevitable consequence of the aging process and as such beyond preventive or remedial measures. This view has been shortsighted and not at all in line with the most recent developments in medicine. But we have at last awakened to the urgency of the situation, and a vast amount of research is now going on to discover the causes of cancer and of the other degenerative processes. With all this activity, it is only a question of time before their vital secrets will be revealed. Once they are known, it should be possible to determine the measures best adapted to counteract, or at least to postpone, the afflictions of old age. These activities will loom large in the health program of the immediate future.

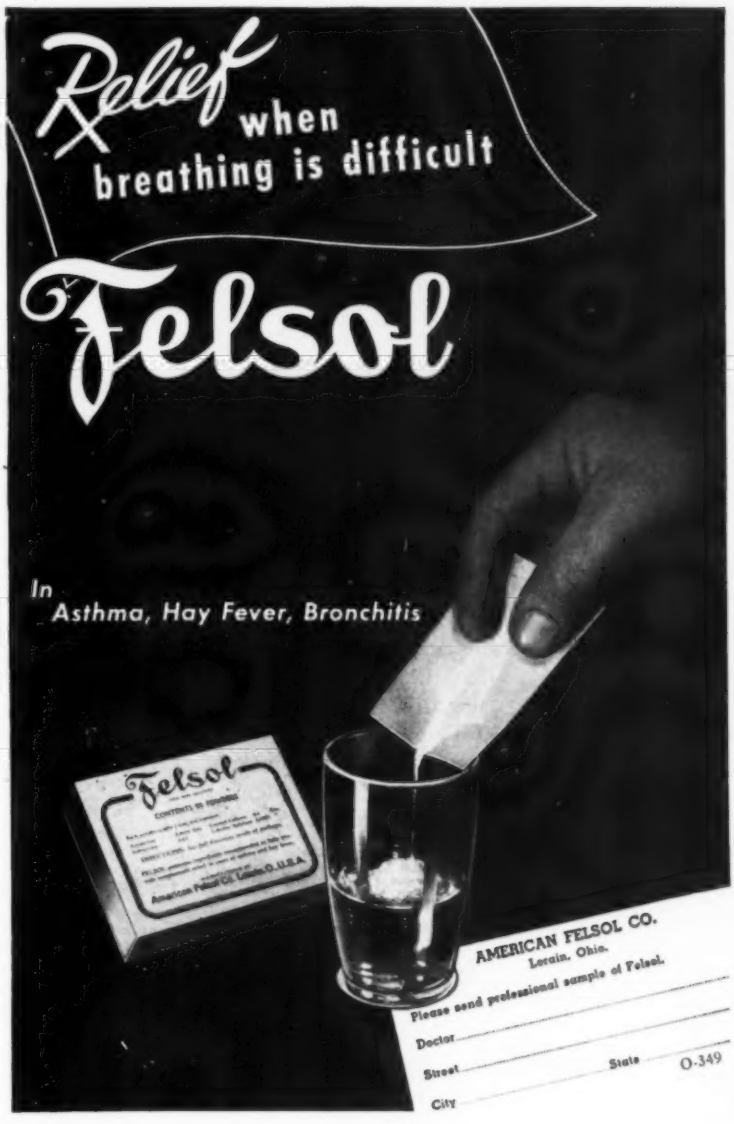
Another field that must receive more concerted attention from the public health profession is mental hygiene. Mental disorders constitute a major problem in our complex civilization. Fortunately, there are indications that we now appreciate the gravity of the problem and are beginning to prepare more trained people for this field of work. Our children will be better prepared for a healthy and normal life when such workers become generally part of the regular staff of our schools and colleges.

Much has yet to be accomplished in the reduction of accidents. Health officers have shied away from this field, and yet it is one in which they can play a very useful part. Accidents constitute the leading cause of death of children and young people and lend themselves to control, provided the necessary educational work is done. The public health profession is in a peculiarly favorable position to do it.

While the services of public health workers in the next century may not be as spectacular as in the past, they will be equally useful. It will all depend on the degree to which objectives will be reoriented and the necessary personnel trained to cope with the new problems which demand attention. Health officers will need to know more of mental hygiene, of social services, and of effective community organization. More and more, we shall count on them to organize the health services of the community, especially for older people. The aim will be not only to control disease but also to build up a population sound in mind and body—an objective in which all the civic agencies and the professional personnel, particularly the private medical practitioners of the community, can participate. We have the resources; we have the necessary local organizations. If health officers and their associates will step into the breach and make their office the center of health service in the truest sense of the word, those who summarize the record of the next century will have an equally inspiring story to tell. The public health profession will, I am sure, broaden its outlook. Through the World Health Organization we have joined hands with most other countries to raise the level of health on a global scale. There are few forces which can exert greater influence to insure world happiness and world peace than uniting in this common cause.

In closing, I must extol the role of our own society in the extraordinary health developments of the last century. The American Public Health Association early took leadership and gave direction to the public health movement. The first officers of the Association were the outstanding physicians and sanitarians of their day, including, among others, Stephen Smith, Elisha Harris, and E. M.

Snow of Providence. They helped to write the necessary legislation which led to the creation of state and local health departments. They set up standards of practice. The annual meetings of the Association gave opportunity for stock-taking, for vital discussions, and for the development of plans. A succession of truly great health administrators and teachers took their place in the Association—Baker, Sedgwick, Frankel, Ravenel, Rosenau, Frost, Freeman, Winslow and many others. In good time, our *Journal* was issued. The Committee on Administrative Practice began its operations and for nearly 30 years has helped to establish the guiding principles which have raised the level of health work throughout the country. In numberless ways, our society has been in the forefront in health education, in setting standards of training of health personnel, and in developing the necessary leadership. Our society on this occasion can be very proud of the part it has played in the history of the public health movement in America. It is particularly appropriate that we meet in Boston on this occasion, when our President and our President-Elect are both good and tried Bostonians who have given many years to the betterment of health in their city and in the nation.



NURSING IN TUBERCULOSIS

The increasing demand for nurses is a constant source of difficulty in tuberculosis control and care. In the next few years we expect to see several thousand new hospital beds for the tuberculous, but the question of who will take care of the patients in these beds remains unanswered. In some hospitals today, as much as 70 per cent of "nursing" care is given by untrained workers.

We know that all types of hospitals are short of nurses. The reason the shortage is so disproportionate in the field of tuberculosis, we tell ourselves, is that the schools of nursing do not give enough tuberculosis training. In 1946, only 24 per cent of the schools of nursing in the United States offered any undergraduate clinical experience in tuberculosis at all. In most schools very little time is devoted to classroom instruction in tuberculosis and what little instruction there is, is usually scattered among lectures on other subjects. Furthermore, it is hard to find teachers and supervisors trained in tuberculosis nursing because so little emphasis has been given it in the past.

For the most part, the schools are not unaware of the inadequacy of their training in tuberculosis. But understandably, they are unwilling to place their students in hospitals where protective techniques are questionable, and the risk of infection is great, as is the case in many tuberculosis wards and hospitals.

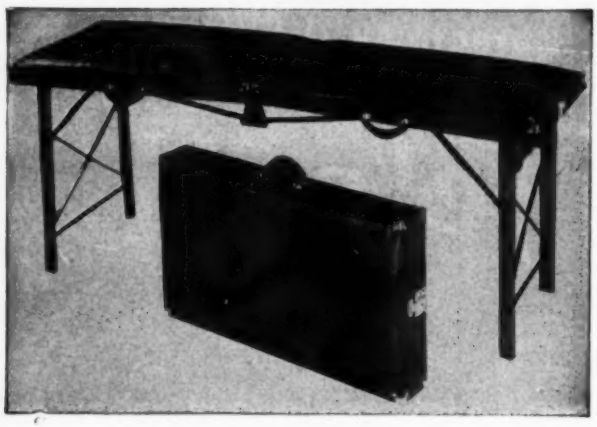
True, tuberculosis is communicable, and there is always danger of infection however many precautions are taken. But too many hospitals and sanatoria fail to provide even rudimentary protection in the form of conveniently located handwashing facilities, adequate supplies of gowns and masks, sterilization equipment, and dust-control measures.

In training, in isolation wards, and on communicable disease services, nurses are taught procedures for isolation in dealing with infectious diseases. But in tuberculosis — indeed a communicable disease—teaching and practice are often at variance. In the tuberculosis ward or hospital, the nurse often finds the communicability of the disease treated lightly; and frequently finds doctors disagreeing about protective measures.

There is no doubt that more research in the communicability of tuberculosis and in measures which can be taken to protect all hospital workers against infection is needed. The study of early tuberculous lesions among student nurses now being made under the joint auspices of the Public Health Service and the National Tuberculosis Association is one such program, and we hope that it will bring useful results. The evaluation of BCG as an immunizing agent is another. A study of the effectiveness of gauze masks in protecting rabbits against tuberculous infection was reported by Dr. Lurie and Dr. Abramson in last month's issue of the *American Review of Tuberculosis*.

Some schools of nursing have made energetic and often successful attempts to provide safe surroundings for their girls on tuberculosis service. Quite

IDEAL FOLDING TABLE



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properly, they do not want to limit their students' experience and their futures by excluding specialties because they are difficult or hazardous. This is encouraging and will result in more nursing care for tuberculous patients.

Lacking any absolute protection against tuberculosis, however, we must make the widest possible application of the communicable disease techniques we already have. Furthermore, we must employ every technique for picking up the earliest manifestations of tuberculous infection among physicians, nurses, and other hospital workers through periodic tuberculin testing and x-ray examination, so that we may define the problem adequately.

As public health officials, members of hospital boards, hospital superintendents, doctors, and nursing educators and administrators, we must arouse ourselves to the necessity for enforcing protective measures. Only after we have made tuberculosis nursing as safe as it can possibly be can we have cause to expect the acute shortage of nurses in tuberculosis to ease; only then can we expect a greater number of nurses to be attracted to the specialty of providing for tuberculous patients the care necessary for complete recovery.—Robert J. Anderson, Medical Director, Chief, Division of Tuberculosis, *Public Health Reports*, February 4, 1949.

DEATHS BY AGE: UNITED STATES, 1947

The average age at death in the United States during 1947 was 3.6 years higher for women than for men, according to figures released today by the National Office of Vital Statistics of the Public Health Service, Federal Security Agency. The average (median) age at death for women was 66.9 years as compared with 63.3 for men.

In general, the average age at death has been increasing since 1933, the first year in which data are available for the entire continental United States, the increase being faster for women than for men. For women the increase was 13 per cent, from 59.2 years in 1933 to 66.9 in 1947 as compared with an increase of 10 per cent for men, from 57.5 to 63.3 during this period. For both sexes the average age at death was 64.8 years in 1947, or an increase of 11 per cent, from 58.2 in 1933.

Mortality varies greatly with age, race, and sex. It is comparatively high among infants less than 1 year of age and is lowest among children 5-9 and 10-14 years of age. After these age groups the death rate increases steadily with age. In each age group the death rate for females is lower than the rate for males and, except in the age group 75 years and over, the rate is lower for the white than for the nonwhite population.

LOST OR STOLEN ORDER FORMS

The following notice was issued on January 3, 1949, from the Office of the Commissioner of Narcotics, Treasury Department, Washington 25, D. C. To importers and manufacturers of and wholesale dealers in narcotics:

In addition to the Order Forms for opium, etc., reported lost, stolen or in possession of persons not entitled to receive narcotic drugs in Narcotic Circular No. 298 dated July 1, 1948, the following have been similarly reported and are possibly in the hands of persons not entitled thereto:

Serial Numbers:

151517		V8841-850	"
409995-410000	incl.	V22971-980	"
426691-700	"	V27788	
587641-650	"	V58150	
743654-660	"	V60351-360	"
830251-260	"	V63624	
A117518		V65941-950	"
C278551-560	"	V79971-980	"
M351781-790	"	V94564	
M934284		V108891-900	"
N76791-800	"	V119744	
N100291-300	"	V163024-030	"
N105871-880	"	V169039	
N381571-580	"	V177380	
N391481-490	"	V177381	
N568111-120	"	V186477-480	"
N568481-490	"	V228536-540	"
N709251-260	"	V241771-780	"

N882411-420	"	V247941-950	"
N935591-600	"	V273121	
R8091-100	"	V285813	
R22331-340	"	V288091-100	"
R360711-720	"	V288099-100	"
R780111-120	"	V327714	
R781281-290	"	V384182	
R848171-180	"	V385537-540	"
R855508-510	"	V387732-740	"
R974111-120	"	V388831-840	"
T226711-720	"	V394399	
T231791-800	"	V395951-960	"
T233471-480	"	V396105	
T374915		V396121-130	"
T507832-840	"	V454732-740	"
T717441-450	"	V459591-600	"
T854571-580	"	V469391-400	"
T865681-690	"	V474021-030	"
T953151		V519971-980	"
U21749		V521237	
U55241-250	"	V576441-450	"
U75914		V576573-580	"
U78066-070	"	V59815f-160	"
U78351-360	"	V615464	
U78689-690	"	V620401	
U223651-660	"	V635675-680	"
U248028		V661628-630	"
U324065-070	"	V667781-790	"
U347201-210	"	V675674-680	"
U347683-690	"	V725761-770	"
U355481		V732045-050	"
U392734		V761961-970	"
U434081-090	"	V762601-602	"
U446621-630	"	V764741-750	"
U488800		V784782-790	"
U529971-980	"	V802813	
U633115-120	"	V803711	
U639908		V814751-760	"
U642331-340	"	V818911-920	"
U655232-240	"	V821263-270	"
U704981-990	"	V833602-610	"
U728658-660	"	V835511-520	"
U789701-710	"	V836231-240	"
U794561-570	"	V850781-790	"
U798851-860	"	V851081-090	"
U838672-680	"	V858831-840	"
U876963		V868341-350	"
U884034		V919441-450	"
U932651-660	"	V928861-870	"
U992205-210	"	X38104-110	"
U993655		X69231-240	"

You are cautioned not to fill any order form on which one of the aforementioned serial numbers appears, or any form listed in Circular No. 298 except Nos. M930981-990, U166651-660, U669667 and U912231-240, all inclusive which have been found. You should preserve Circulars Nos. 298 and 302 as the list of forms not to be filled. All others to date listing lost or stolen order forms may be considered superseded.

If possible, please forward to this office at once any order form presented to you, the serial number of which is listed in either of these two circulars. If you are unable to forward the order forms, please advise of the names and addresses appearing thereon and the name and quantity of each item of narcotic drug requested.

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Cutshall, Donald K., Box 2, South Houston

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January 22, 1949

Fowler, Glenwood
Giesler, Jacob William
Gunne, Hugh John
Jones, Everett W.
Mihalevich, Richard Anthony
Relich, Victor
Wescott, Thomas P.

GRADUATES OF DES MOINES STILL COLLEGE OF OSTEOPATHY AND SURGERY

January 26, 1949

Braunschweig, Henry Junior
Dozier, Thomas Calbeck
Griffin, Stanley
Leuty, Gerald Johnston
Mallory, Victor A.
Pettit, Robert Leland
Roberts, Kenneth Mason
Wilson, Bryce Elwood

CHANGE OF ADDRESS AND NEW LOCATIONS

Agnew, Harry R., from New London, Mo., to Pleasant Hope, Mo.

Aiken, Donald N., from Socorro, N. Mex., to Los Lunas, N. Mex.

Andrews, Hazel M., from 138 Minorca Ave., to 176 Minorca Ave., Coral Gables 34, Fla.

Austin, Regina M., from 1010 N. Brand Blvd., to 807 N. Central Ave., Glendale 3, Calif.

Bartkowiak, Jerome E., CCO '48; 4623 52nd St., Detroit 10, Mich.

Beghtol, Gene H., from Correctionville, Iowa, to 330 Lime Ave., Long Beach 2, Calif.

Bell, John, from 12411 St. Clair Ave., N. E., to 9854 Lorain Ave., Cleveland 2, Ohio

Berrey, Ivan W., KCOS '48; P. O. Box 291, Kirksville, Mo.

Blair, Raymond R., from Los Angeles, Calif., to Corona Theatre Bldg., Corona, Calif.

Blumberg, Robert B., from 4212 N. Darien St., to 3011 N. Fifth St., Philadelphia 33, Pa.

Bonham, Lillian C., from Anderson, S. C., to R.F.D. 2, Taylors, S. C.

Boyd, Robert W., from 15316 Antioch St., to 978 Monument St., Pacific Palisades, Calif.

Brown, William B., from Kirksville, Mo., to Los Angeles County Osteopathic Hospital, 1100 N. Mission Road, Los Angeles 33, Calif.

Browning, Zack C., Lt. (j.g.) MCR, USNR, from First Marine Prov. Brigade, Co. B., Med. Battalion (Guam) to Aiea Navy Hospital, Aiea Heights, Honolulu, T. H., c/o FPO San Francisco, Calif.

Buchanan, Sam A., from Cedar Rapids, Iowa, to 3405 St. Marys Ave., Hannibal, Mo.

Burns, C. P., from 300 State St., to 221½ Main St., St. Joseph, Mich.

Carey, Edwin C., from 15170 Lahser Road, to 15174 Lahser Road, Detroit 23, Mich.

Carhart, Vera Cornell, from Pleasant Ridge, Mich., to Box 57, Alton, Mo.

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Carhart, William, from Pleasant Ridge, Mich., to Box 57, Alton, Mo.
Clapperton, James S., from Bay City, Mich., to Breckenridge, Mich.
Cline, Ronald A., from Alhambra, Calif., to 130 E. Philadelphia St., Whittier, Calif.
Congdon, Earl E., from Lapeer, Mich., to 422 W. Fourth Ave., Flint 4, Mich.
Cox, Minnie C., from 12942 E. Jefferson Ave., to 9235 Agnes St., Detroit 14, Mich.
Culp, Anna Cole, from Winfield, Kans., to Route 2, Burden, Kans. (change of name from Anna R. Cole.)
Darrow, A. Kent, from Los Angeles, Calif., to 805 N. Central Ave., Glendale 3, Calif.
Dobson, H. Frederic, Jr., from 26105 Annapolis Road, to 7400 Oakman Blvd., Dearborn, Mich.
Drennan, B. M. Wilson, from Wyandotte, Mich., to 4116 S. Compton Ave., St. Louis 18, Mo. (change of name from Betty M. Wilson)
Dugas, Jean E., from Mendota, Calif., to Hippodrome Bldg., Taft, Calif.
Dunham, James E., from Mansfield, Ohio, to 205 Metropolitan Bldg., 39 S. Main St., Akron 8, Ohio
Eggleston, Clark R., from Sedalia, Mo., to Chico Hospital, Pray, Mont.
Erlingheuser, Ralph F., from South Pasadena, Calif., to 315 E. Main St., Alhambra, Calif.
Everett, Carl E., from Harrisonville, Mo., to 5725 Camp Bowie Blvd., Fort Worth 7, Texas
Feltoon, Ervin, from Atlantic City, N. J., to 209 Haddon Ave., Westmont, N. J.
Flack, Charles B., from 80 Elm St., to 18 Boutelle Ave., Waterville, Maine
Ford, Charles F., from 166 Geary St., to 2238 Hyde St., San Francisco 9, Calif.
Fox, John H., from Des Moines, Iowa, to 596 N. Holliston Ave., Pasadena 4, Calif.
Frantz, David W., PCO '48; 5824 Webster St., Philadelphia 43, Pa.
Ge Meiner, F. M., from Commercial Bldg., to Nampa D Bldg., Nampa, Idaho
Goodwin, Lloyd, from 650 Forest Ave., to 507 Woodfords St., Portland 5, Maine
Greenburg, Theodore, from Pomona, Calif., to 318 E. Valley Blvd., Alhambra, Calif.
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Harrold, F. O., from Waurika, Okla., to Byers, Texas
Heberle, Clement K., from 1130 S. Ridgewood Ave., to 116 Seabreeze Blvd., Daytona Beach, Fla.
Heist, Mary L., from Toronto, Ont., Canada, to 144 King St., W., Kitchener, Ont., Canada
Holcomb, Mickie G., from Tulsa, Okla., to 1903 Elizabeth St., Wichita Falls, Texas
Hombs, Addison, from Lansing, Mich., to Carson City Hospital, Carson City, Mich.
Horne, Carroll V., from 302 Muskegon Bldg., to 426 W. Western Ave., Muskegon, Mich.
Hover, R. Earl, from Box 68, to Box 19, Burr Oak, Mich.
Hoyt, Thomas L., from 721 S. West Ave., to 1022 S. Webster Ave. Jackson, Mich.
Hudson, C. Kathryn, from 116 Lake Road, to Grandview Osteopathic Hospital, Inc., Ponca City, Okla.
Hudson, W. Guy, from 116 Lake Road, to Grandview Osteopathic Hospital, Inc., Ponca City, Okla.
Illsley, Wilbur W., from 302 N. Pomona St., to 125 E. Wilshire Ave., Fullerton, Calif.
Jaffe, Edward P., from Los Angeles, Calif., to 506 Bainbridge St., Philadelphia 47, Pa.
Jing, Fong Q., Jr., from 1124 Fedora St., to Los Angeles County Osteopathic Hospital, 1100 N. Mission Road, Los Angeles 33, Calif.
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Kanoff, Saul, from 2401 S. Opal St., to 1040 Johnston St., Philadelphia 48, Pa.
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Larner, Julius, from San Marino, Calif., to 742 S. Atlantic Blvd., Los Angeles 22, Calif.
Lauder, Douglas F., from Toronto, Ont., Canada, to 444 Waterloo St., London, Ont., Canada.
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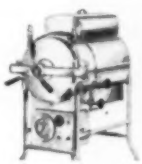

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Pfeffer, C. E., from Dallas, Texas, to Evant, Texas

Richardson, Flora May, from South Laguna, Calif., to Claremont Manor, Unit No. 1, Claremont, Calif.

Richardson, Julia E., from South Laguna, Calif., to Claremont Manor, Unit No. 1, Claremont, Calif.

Ripple, Robert A., from Belle Plaine, Kans., to Dr. Young Clinic, 715 College, Alva, Okla.

Rohr, Loren R., from Kansas City, Mo., to Granbury General Hospital, Granbury, Texas

Ross, Eugene F., from Wilson, Okla., to 315 Tecumseh St., Lindsay, Okla.

Ruffo, Michael M., from 320-22 Denver Theatre Bldg., to 1410 S. Broadway, Denver 10, Colo.

Scarborough, William H., from Porum, Okla., to Allentown Osteopathic Hospital, 1746 Hamilton St., Allentown, Pa.

Schaefer, Waldemar D., from Freedom, Okla., to McHenry Bldg., Edinburg, Texas

Scott, Glenn R., from Roswell, N. Mex., to 805 Jefferson St., Amarillo, Texas

Seaman, Kent L., from Sierra Madre, Calif., to 112 N. Bright St., Whittier, Calif.

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Siegel, Saul, from Phoenix, Ariz., to 1522 W. Ninth St., Des Moines 14, Iowa

Simmons, L. W., from Box 672, to 457 W. Third St., Rifle, Colo.

Slovak, John P., from Beaver Meadows, Pa., to 247 S. Fifth St., Reading, Pa.

Smith, Fern, from 7206 Long Beach Blvd., to 7206 Pacific Blvd., Huntington Park, Calif.

Snow, Robert R., from 3901 Chestnut St., to Hotel Penn-Sheraton, 3900 Chestnut St., Philadelphia 1, Pa.

Spence, William C., Jr., from 112 S. Columbus St., to 115 S. Columbus St., Alexandria, Va.

Spungin, Jacob, from Worcester, Mass., to 1 Wethered St., Auburn, Mass.

Thomas, Price E., from Yoncalla, Ore., to Knox Bldg., Ashland, Ore.

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Vekert, Charles E., from 5250 E. Ellis Ave., to 1633 W. 63rd St., Chicago 36, Ill.

Walker, D. D., from 626 Huron Ave., to 1130 Lapeer Ave., Port Huron, Mich.

Weeks, Earl B., from 14341 W. McNichols Road, to 16934 W. McNichols Road, Detroit 19, Mich.

Welkowitz, Mortimer L., PCO '48; 314 E. Fourth St., New York City 9, N. Y.

Willcutt, Eugene C., from Sisters, Ore., to Alice Clinic & Hospital, 201 E. Second St., Alice, Texas

Wooliscroft, Kenneth S., from 4845 Gaston Ave., to 5004 Ross Ave., Dallas 6, Texas

Yasso, Joseph, from Detroit, Mich., to 1021 Linwood Blvd., Kansas City 3, Mo.

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BLOOD TRANSFUSION. By Elmer L. DeGowin, M.D., Associate Professor of Internal Medicine, State University of Iowa; Director, Blood Transfusion Service, University Hospitals; Member of the Committee on Blood and Blood Derivatives, National Research Council; Member of the Advisory Board for Health Services, American National Red Cross; Secretary of the Subcommittee on Blood Substitutes, National Research Council 1940-45; Robert C. Hardin, M.D., Assistant Professor of Internal Medicine, State University of Iowa; Formerly Senior Consultant in Blood Transfusion and Shock in the European Theater of Operations, U. S. Army, and Commanding Officer of the ETO Blood Bank; and John B. Alsever, M.D., Senior Surgeon, U. S. Public Health Service; Chief Professional Standards, Hospital Division, U.S.P.H.S.; Director of the Syracuse University Blood Transfusion Service, 1940-42; Technical Director of the Blood Plasma Section, Medical Division, U. S. Office of Civilian Defense, 1942-44; Director of the Civilian Blood Donor Service and Associate National Medical Director, The American National Red Cross, 1944-46. Cloth. Pp. 587, with illustrations. Price $9.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

CAMPBELL'S OPERATIVE ORTHOPEDICS. Editor, J. S. Speed, M.D., and Associate Editor, Hugh Smith, M.D., Memphis, Tennessee. Ed. 2. Volume I and II. Cloth. Pp. 1687, with illustrations. Price $30.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

SURGERY OF THE HAND. By Sterling Bunnell, M.D., Honorary Member of American Academy of Orthopedic Surgeons, Member of American Surgical Association, American Association of Plastic Surgeons, American Society of Plastic and Reconstructive Surgery, American Association for the Surgery of Trauma and American Society for Surgery of the Hand, Consultant in Hand Surgery to the Surgeon General, Licentiate of American Board of General Surgery and Plastic Surgery, Corresponding Member of British Orthopedic Association. Ed. 2. Cloth. Pp. 930, with illustrations. Price $16.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1949.

THE VENEREAL DISEASES. A Manual for Practitioners and Students. By James Marshall, M.D., B.S., M.R.C.S., L.R.C.P., Director, Venereal Diseases Clinic, Royal Northern Hospital, London; Consulting Dermatologist, Central Middlesex County Hospital; lately Advisor in Venereology to the War Office, etc. Ed. 2. Cloth. Pp. 370, with illustrations. Price $5.50. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

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THE BUSINESS SIDE OF MEDICAL PRACTICE. By Theodore Wiprude, Executive Director and Secretary of The Medical Society of The District of Columbia and Managing Editor of the Medical Annals of the District of Columbia. Ed. 2. Cloth. Pp. 232, with illustrations. Price $3.50. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

OBSTETRIC ANALGESIA AND ANESTHESIA. By Franklin F. Snyder, M.D., Associate Professor of Obstetrics and Associate Professor of Anatomy, Harvard Medical School. Cloth. Pp. 401, with illustrations. Price $6.50. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

CHILD PSYCHIATRY. By Leo Kanner, M.D., Associate Professor of Psychiatry, The Johns Hopkins University; Associate Professor of Pediatrics, The Johns Hopkins University; Director, Children's Psychiatry Service, The Johns Hopkins Hospital, Baltimore, Maryland. Ed. 2. Cloth. Pp. 752. Price $8.50. Charles C. Thomas, Publisher, 301 E. Lawrence Ave., Springfield, 1949.

PSYCHODYNAMICS AND THE ALLERGIC PATIENT. By Harold A. Abramson, M.D., F.A.C.A., Associate Physician for Allergy, The Mount Sinai Hospital, New York, N.Y.; Consulting Physician for Allergy, Sea View Hospital, Staten Island, N. Y.; Assistant Professor of Physiology, Columbia University, New York, N. Y. Cloth. Pp. 81. Bruce Publishing Company, 2642 University Ave., St. Paul 4, 1948.

MAYO CLINIC DIET MANUAL. By The Committee on Dietetics of the Mayo Clinic. Cloth. Pp. 329. Price $4.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

DIABETIC MENUS, MEALS AND RECIPES. By Betty M. West. Cloth. Pp. 254. Price $2.95. Doubleday & Co., 14 W. 49th St., New York, 1949.

THE 1948 YEAR BOOK OF ORTHOPEDICS & TRAUMATIC SURGERY. Edited by Edward L. Compere, M.D., F.A.C.S., Associate Professor of Surgery, Northwestern University Medical School; Chairman, Departments of Orthopedic Surgery, Wesley Memorial and Children's Memorial Hospitals; Consultant Orthopedic Surgeon, Chicago Memorial Hospital; Consultant in Orthopedics, U. S. Naval Hospital, Great Lakes, Illinois. Cloth. Pp. 464, with illustrations. Price $5.00. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago, 1949.

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RHEUMATIC FEVER. By Sabra S. Sadler, R.N., B.S., Consultant Nurse, Rheumatic Fever Program, Virginia State Health Department; Associate Professor of Public Health Nursing, The Medical College of Virginia. Cloth. Pp. 152, with illustrations. Price $3.50. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1949.

CLINICAL ASPECTS AND TREATMENT OF SURGICAL INFECTIONS. By Frank Lamont Meleney, M.D., F.A.C.S., Associate Professor of Clinical Surgery, College of Physicians and Surgeons, Columbia University; Associate Visiting Surgeon, Presbyterian Hospital, New York City. Cloth. Pp. 840, with illustrations. Price $12.00. W. B. Saunders Company, West Washington Square, Philadelphia, 1949.

ORAL ANATOMY. By Harry Sicher, M.D., Professor of Anatomy and Histology, Loyola University School of Dentistry, Chicago College of Dental Surgery. Cloth. Pp. 530, with illustrations. Price $15.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

SAFEGUARDING MOTHERHOOD. By Sol T. De Lee, M.D., Clinical Instructor of Obstetrics and Gynecology, University of Illinois; Attending Obstetrician at the Chicago Maternity Center; Former Associate in Obstetrics and Gynecology, Cook County Hospital. Cloth. Pp. 136, with illustrations. Price $2.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1949.

CLINICAL CASE-TAKING. By George R. Herrmann, M.D., Ph.D., Professor of Medicine, University of Texas. Ed. 4. Cloth. Pp. 240. Price $3.50. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1949.

MUSCLES, Testing and Function. By Henry O. Kendall and Florence P. Kendall, Physical Therapy Department, Children's Hospital School, Baltimore, Maryland. Cloth. Pp. 278, with illustrations. Price $7.50. The Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore, 1949.

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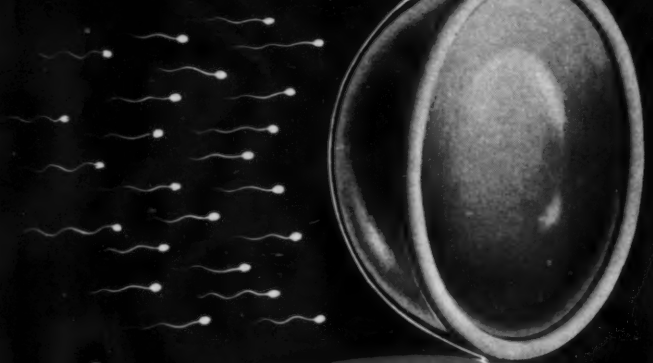

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